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Volume 15 March 1950 Number 1

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NOTICE TO AUTHORS

Before submitting manuscripts for publication authors should consult Information for Contributors to the Journal of Speech and Hearing Disorders, *JSHD*, 1949, **14**, 93-94. Prospective authors are invited to write the Editor for copies of this Note, and of its supplement, Examples of Manuscript Form.

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The American Speech and Hearing Association

presents THE HONORS OF THE ASSOCIATION

to its retiring president DELYTE WESLEY MORRIS

The Council of the American Speech and Hearing Association votes unanimously that: *the Honors of the Association for distinguished contribution to the field of speech and hearing be awarded to Professor D. W. Morris, a statement of this award to be published in the March, 1950 issue of the* Journal of Speech and Hearing Disorders, *together with a portrait of Professor Morris and a summary of the achievements for which the award is granted.*

Resolved: That the ASHA express its warm appreciation of the competent devotion to the profession's best interests of its distinguished retiring President, Dr. D. W. Morris. The accomplishments that have marked his Presidency are the benevolent extension of a long series of remarkably fruitful achievements and these achievements have been thoroughly oriented toward the enrichment of life for an ever-growing number of his fellows. His constructive effects on our organization and our profession shall become ever more far-reaching with the passage of time.

—The American Speech and Hearing Association, in convention at Chicago, Illinois, December 29-30, 1949.

I. Biographical Summary

Morris, Delyte Wesley, speech pathologist, educator; b. Xenia, Ill., April 11, 1907; m. Dorothy Arnold Mayo, 1930; ch. Peter Craig, Michael Alan.

B.A., Park Coll., 1928; M.A., Univ. of Maine, 1934; Ph.D., Univ. of Iowa, 1936.

Teacher, Sulphur High Sch., Okla., 1928-1930; Inst. Pub. Spkg., Univ. of Maine, 1930-1936; Chrm. Dept. of Sp., Jr. Coll. of Kansas City, Mo., 1936-1938; Prof. of Sp., Chrm. Dept. of Sp., Dir. Special Ed. Clinics, Indiana St. T. Coll., 1938-1946; Prof. of Sp., Dir. Sp. and Hearing Clin., Ohio St. Univ., 1946-1948; Pres. Southern Ill. Univ., since 1948.

Member, Int. Council Exceptional Children; Consult. U. S. Vet. Admin.; Fellow, Amer. Sp. and Hearing Assn. (Secy.-Treas., 1941-1948; Pres., 1949); Cent. States Sp. Assn. (Pres., 1946); Indiana Sp. Assn. (Pres., 1943).

Contributor of articles to professional journals.

II. Contribution to Speech and Hearing

For over 20 years Delyte Wesley Morris has worked hard and effectively to promote the beneficent development of speech pathology and audiology in many local situations as well as at the level of national leadership. His career may be high-lighted by indicating the lines of his major interests and the character of his outstanding talents.

Professor Morris is to be appreciated, first of all, as an educator. He has applied himself successively as a high school teacher, university instructor, academic and clinical administrator in a municipal junior college, a state teachers' college and a great state university, and finally as a university president in an important and rapidly expanding institution. In each of these situations he has distinguished himself by the breadth of his conception of his task.

In relationship to this base, then, the second chief fact about Professor Morris is to be recognized and appraised. This fact is that, as an educator, he has consistently demonstrated a sure feeling for exceptional and handicapped students. His graduate training as a speech pathologist is doubtless responsible in part for this tendency, but all who know Professor Morris intimately are fully aware of the untutored naturalness of his concern for the unfortunate and the unusual. He is a kindly man. His achievements symbolize the powerful and unrelenting force of enlightened kindliness.

It has been, then, as an informed and kindly teacher that Professor Morris has entered into the councils of leadership in education in this country. And in these councils a third distinguishing characteristic of the man has made itself thoroughly evident: Professor Morris has a remarkable capacity for organizational administration. At every stage of his career he has identified himself constructively, and as a leader, with organized groups and endeavors looking toward educational statesmanship. As a consequence, he has done much indeed to win respect and active support for speech pathology and audiology at all levels of education on a nationwide front.

For this, and for himself as a person, Professor Morris is greatly respected and justly honored by his colleagues and good friends in the American Speech and Hearing Association.

The American Speech and Hearing Association

presents THE HONORS OF THE ASSOCIATION

to HARVEY FLETCHER

The Council of the American Speech and Hearing Association votes unanimously that: *the Honors of the Association for distinguished contribution to the field of speech and hearing be awarded to Dr. Harvey Fletcher, a statement of this award to be published in the March, 1950 issue of the* Journal of Speech and Hearing Disorders, *together with a portrait of Dr. Fletcher and a summary of the achievements for which the award is granted.*

—The American Speech and Hearing Association, in convention at Chicago, Illinois, December 30, 1949.

I. Biographical Summary

Fletcher, Harvey, physicist; b. Provo, Utah, Sept. 11, 1884; m. Lorena Chipman, 1908; ch. Phyllis, Stephen Harvey, James Chipman, Robert Chipman, Harvey J., Paul C.

B.S., Brigham Young Univ., 1907; Ph.D. (*summa cum laude*), Univ. of Chicago, 1911; honorary Sc.D., Columbia Univ., 1935, Kenyon Coll., Stevens Instit. of Tech., and Case Instit. of Tech., 1942; Univ. of Utah, 1944.

Inst. of Physics, Brigham Young Univ., 1907-1908; Inst., Univ. of Chicago, 1909-1910; Fellow, Univ. of Chicago, 1910-1911; Head of Physics Dept., Brigham Young Univ., 1911-1916; on engineering staff of research dept., Bell Tel. Labs. since 1916, Director in Physical Research since 1933. Summers, Prof., Univ. of Chicago, 1913; Lecturer, Univ. of Michigan, 1925, Mass. Instit. of Tech., 1927, Cornell, 1949. Lectured on audition in France and Germany, 1937. Chief, Section on Acoustics, Nat. Def. Res. Comm., during World War II. Member of Advisory Board, Research Council, Rutgers; Nat. Councilor, Ohio State Research Founda.; Nat. Res. Council.

Member of Executive Council, Amer. Instit. of Physics; Fellow, Amer. Phys. Soc. (V. Pres., 1944; Pres., 1945); Fellow, Amer. Acad. Ad. Sc. (V. Pres., 1937-1938); Fellow, Amer. Instit. Elec. Eng.; Member, Amer. Soc. for Hard of Hearing (Pres., 1929-1930); Utah Acad. Science (Pres., 1915-1916); Honorary Member, Acoustical Soc. of Amer. (Pres., 1929-1930); Nat. Acad. of Sc.; Honorary member, Audio Engineering Soc.; awarded Louis Edward Levy medal for physical measurements of audition, 1924; awarded Soc. of Motion Picture Engineers Progress Medal, 1949.

Author, *Speech and Hearing*, 1929. Contributor of papers on electronic charge and theories of hearing. Directed the early development of Western Elec. audiometers; research on sound transmission; holder of 20 patents.

II. Contribution to Speech and Hearing

Dr. Harvey Fletcher is a physicist of renown who has added immeasurably to our understanding of the physical foundations underlying the communicative process. The appearance, in 1929, of his book, *Speech and Hearing*, defined in new detail the acoustics of speech and the psychoacoustics of audition. His book is an embracing summary of a unified research program without equal in the field. The description it offers of the physical characteristics of speech and the analysis it presents of auditory phenomena, particularly in regard to the hearing of speech, have become classical. *Speech and Hearing*, as well as many supplementary publications, introduced techniques for research and conventions for representing data which have become standard practice. The intervening years have brought added respect for both the stability and the scope of the pioneering contributions made by the author and his co-workers.

While speech correction and audiology must mark the appearance of *Speech and Hearing* as a milestone, it was only a progress report in Dr. Fletcher's career. His recent activities are less well known to us, but history may show them to be the more important for our fields. His personality and scientific maturity made themselves widely felt through his direction of research at the Bell Telephone Laboratories and through his other professional activities.

During the recent war, Dr. Fletcher's definitive guidance was here felt in the wartime research projects of greatest interests to speech and hearing. We are still assimilating the gains from these projects and from the impetus to research which they engendered.

Dr. Harvey Fletcher is a great scientist whose greatness is enhanced by kindness and humility which endear him to all who know him.

Announcing the

TWENTY-SIXTH ANNUAL CONFERENCE

of the

AMERICAN SPEECH AND HEARING ASSOCIATION

November 9-11, 1950, Deshler-Wallick Hotel, Columbus, Ohio

FORMAL CALL FOR PAPERS

THE PROGRAM COMMITTEE will continue to receive for examination until July 1, abstracts of papers and addresses proposed for a place on the program of the 1950 meeting of the Association. Four general types of material will be considered:

1. Theoretical or experimental papers on speech disorders, hearing disorders, experimental phonetics, speech science, or psychoacoustics.
2. Practical papers on techniques for the rehabilitation of speech or hearing disorders.
3. College, Medical School and University resident and non-resident diagnostic and remedial programs for speech or hearing disorders.
4. National, state, or city programs for the rehabilitation of speech or hearing disorders.

The Committee will operate under the rules set down in the Constitution of the Association.

All abstracts must be received by the Committee by July 1, 1950. In addition to summarizing the paper, each abstract must indicate (a) the time required for presentation, (b) details on the type of visual or audio aids which will be needed, and (c) other requirements. The full name of the professional affiliation of the author should be indicated.

Receipt of an abstract will be taken as evidence that the person submitting it is aware of the following rules governing the conduct of section meetings:

1. All meetings will begin when scheduled.
2. Chairmen will, without exception, hold speakers to time limits as they are set forth in the Program.

The Committee will welcome suggestions from members regarding non-members who can contribute significantly to the program. Such recommendations are to be transmitted to the Committee through a Fellow of the Association.

THE PROGRAM COMMITTEE

Harlan Bloomer
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Joseph M. Wepman
Robert West
Henry M. Moser, Chairman
Speech and Hearing Clinic
Ohio State University
Columbus, Ohio

A Note To The Members Of ASHA

Dear Colleagues:

Some things have happened to the format of your *Journal*. A few of these things are obvious; others are less striking; all were carefully planned. Taken all in all they represent a rather sweeping re-design and scrub-up, and we thought you might like to hear how they came about.

When your new Editor took over his job a year ago his main hope was that he could keep the *Journal* up to the standard set by his brilliant predecessor. He is still trying to do this, and it takes some doing. But, in the natural way of a new person who takes over an old responsibility, he wanted to make some changes. Especially did he think that certain changes would improve the *Journal's* appearance without impairing its function. He started to write these things down as they occurred to him, he looked around for advice and help, and he asked your representatives on the Executive Council for suggestions. Many ideas and proposals came in, those of ex-Editor Wendell Johnson being unusually helpful. All were recorded, sorted out, and studied, and the plans for revision were under way.

From that point on three groups of persons collaborated, each making an indispensable contribution. The first group was your Editorial Staff—Stanley H. Ainsworth, Spencer F. Brown, E. Robert Harrington, Ernest H. Henrikson, Claude E. Kantner, George A. Kopp, Eugene T. McDonald, Martin F. Palmer, Miriam D. Pauls, and S. Richard Silverman. The necessary professional guidance was provided expertly by members of the University Press at the University of Illinois, particularly by Director Wilbur Schramm, Executive Editor Miodrag Muntyan, Editor Donald D. Jackson, Art Editor Ralph E. Eckerstrom (who designed the new cover), and Elaine Pagel Paden, Assistant to the Editor of the *Journal*. Finally, The Interstate Printers and Publishers, Inc., through Russell L. Guin and A. C. Razaitis, cooperated with customary generosity.

Developments were about as follows. Suggestions which had been collected were discussed with the editors of the University Press, who criticized, accepted, rejected, modified, augmented them. Out of these sessions came a set of tentative recommendations which were submitted to the Editorial Staff and the Executive Council for an advisory poll. The results were almost unanimously favorable, and such minor changes as could be made immediately were initiated with the September issue. We were confronted, however, by a depressingly substantial obstacle: the old Ronaldson type. Our advisors stated firmly that significant changes would be pointless until this had been replaced. The Director of the University Press and your Editor then conferred with the printer's representatives who consented to purchase the new type face, Janson, which you see before you. This, it may be added, was no small investment. At about the same time the printer was urged to procure a complete font of phonetic type, so that we could handle such articles as the Wise paper on Russian which you read in December. This request also met with ready agreement. With general plans completed and the new type on order, the University Press then worked out detailed designs and specifications in time to go to press for the issue which you hold in your hand.

In case you are interested, here is a list of the most important changes: Front cover redesigned; table of contents page re-designed and re-located; masthead page re-designed and re-located; title pages of articles redesigned; margin widths re-proportioned; form for running heads revised; old type face replaced throughout; complete font of phonetic characters made available.

We like these changes, and we hope you do too. We don't exactly know why, but we find a little extra pleasure when we think that the year is 1950, that the issue is Number 1 of Volume 15 of the *Journal of Speech and Hearing Disorders*, and that the occasion is the silver anniversary of the American Speech and Hearing Association.

Yours sincerely,
Grant Fairbanks
Editor

Summer Speech And Hearing Programs

John N. Clancy
and
D. E. Morley

(The following survey was prepared at the suggestion of the Editor and is published at this time in the hope that the information which it contains may be of assistance to those who are planning summer programs.)

A NUMBER OF programs for the rehabilitation of speech and hearing are operated throughout the country each summer. In order to obtain descriptive information and statistical data which would make it possible to report on (1) the nature of the summer programs being offered, and (2) where they are offered, a survey was undertaken. Two hundred questionnaires were sent to individuals in 38 states, the District of Columbia, Hawaii, and the province of Ontario, Canada, concerning the 1949 programs conducted and whether a similar program would be offered in 1950. Replies were received from 100; 76 reported having had a 1949 rehabilitation session. Seventy-one indicated that a 1950 program will be in operation along lines similar to those reported in the questionnaire returned.

Some programs are not included due to failures to acknowledge or return the questionnaire. Others may have been overlooked when the blanks were sent out. The tabulation of the 76 reports of 1949 programs which were received, however, yields interesting information. For example, nearly half of the 76 programs have been started since 1945. Twenty-eight have been started since 1947. About 60% of the replies indicated that the pre-school age child was definitely included in the summer training sessions. More than half of the programs provided for both speech and hearing cases. Barely a third indicated that the summer's work was restricted to speech disorders exclusively. In 16 of the programs no group work was provided. In two, no individual work was offered. Additional details of interest can be observed in an examination of replies to specific questions as listed below.

TABULATION OF QUESTIONNAIRE DATA

Was the program university/college sponsored or otherwise?

University/college sponsored	49
Otherwise:	
Hospital	2
Private	2
Provincial Department of Education	1
Rotary Club	1
State Soc. for Cripp. Child. and Adults	2
Veterans Administration	1
University/college *co-sponsored* with one or more of the following:	
Bureau of Vocational Education	1

John N. Clancy (M.A., Michigan, 1937) is Director of University Speech Improvement Camp, and D. E. Morley (Ph.D., Michigan, 1949) is Assistant Professor of Speech and Education, University of Michigan.

Charitable organization	1
City schools	1
City speech and hearing center	1
Junior League	1
State Bureau of Handicapped Children	1
State Department of Education	2
State Department of Health	2
State Department of Welfare	1
State Div. of Services for Cripp. Child.	4
State Society for Cripp. Child. and Adults	9

Was the program operated on the campus or otherwise?

Operated on the campus	56
Otherwise:	
Camp	2
Campus and camp	1
Campus and public schools	1
Campus and school for the deaf	1
Hospital	6
Private Office	3
Public Schools	3
Rehabilitation center	3

What was the principal service area of the program?

Local	30	State	28
Area	12	National	6

How long did the program run?

Part of a year-round program	12
Two weeks	1
Two weeks pre-school	1
Three weeks	1
Four weeks	2
Five weeks	5
Six weeks	28
Seven weeks	2
Eight weeks	16
Nine weeks	2
Ten weeks	3
Twelve weeks (two 6-week sessions)	1
Fourteen weeks (two 7-week sessions)	1

When was the program started?

1949	15	1940	6
1948	13	1938	1
1947	8	1937	1
1946	9	1936	3
1945	5	1935	1
1944	1	1932	2
1943	1	1930	3
1942	1	Prior to 1930	2
		Not answered	4

Was there a pre-school program?

Yes	45
No	27
Not answered	4

What ages were included?

All ages	16	4 to adult	8
Adults only	3	5 to 8	1
1 to 14	1	5 to 12	1
2 to 20	1	5 to 14	1
3 to 10	1	5 to 16	2
3 to 12	1	5 to 20	1
3 to 13	1	5 to 22	1
3 to 14	1	5 to 25	5
3 to 16	1	6 to 14	2
3 to 18	1	6 to 18	2
3 to 19	1	6 to 25	1
4 to 12	1	10 to 12	1
4 to 15	3	12 to 16	1
4 to 16	1	15 to adult	1
4 to 17	3		

What was the 1949 enrollment?

5 to 10	2
10 to 20	12
20 to 30	17
30 to 40	9
40 to 50	9
50 to 60	9
60 to 70	1
70 to 80	2
80 to 90	1
90 to 100	1
100 to 200	1
200 to 300	1
more than 300	1
not reported	10

Was teacher-training a part of the program?

Yes 60	No 15	Not reported 1

Was research a part of the program?

Yes 29	No 45	Not reported 2

What sorts of cases were included in the program?

Speech cases only	24
Speech and hearing cases	48
Hearing cases only	3
Speech, hearing, and remedial reading cases	1

Was the program co-educational?

Yes 74	Male only 2	Female only 0

What housing facilities were used?

None	42
Boarding homes	15
Dormitories	10
Cottages	5
Other	4

Did students and/or staff live with the clients in the housing facilities?

Yes 14 No 62

What kind of recreation program was offered?

None: 41

Kinds of recreational activities where offered: social gatherings, picnics, swimming, dancing, excursions, arts and crafts, plays, physical exercising, classroom recreation, boating, concerts, movies, beach games, recreation room, hiking.

What non-clinical activities were offered?

None: 51

Kinds of non-clinical activities where offered: art work, handicraft, occupational therapy, story-telling, nature study, field trips, academic classes, neuro-muscular rehabilitation, release therapy.

To what other diagnostic and treatment services did the program have access?

None	4
Audiologic clinic	2
College health service	3
Community Counsel Service	2
Dental	17
Guidance	3
Hospital	33
Neurological	3
Occupational therapy	2
Orthopedic	3
Otological	11
Pediatric	6
Physical therapy	3
Psychiatric	10
Psychological	48
Public Health Service	4
Public health nurses	1
Social service	3
Vocational	1

What examinations were required preliminary to admittance to the program?

None	4
Audiometric	22
Dental	5
History only	5
Immunization	1
Interview only	10
Neurological	3
Otological	9
Pediatric	7
Psychiatric	2
Physical (medical)	37
Psychological	35
Reading	2
Refer from M.D. only	1
Social service	3
Speech	35

How many hours per week of individual instruction were given?

None	2
1 to 2	12
2 to 3	8
3 to 4	4
4 to 5	3
5 to 6	9
6 to 7	2
7 to 8	2
more than 10	6
varied	28

How many hours per week of group instruction were given?

None	16
1 to 2	3
2 to 3	10
3 to 4	2
4 to 5	4
5 to 6	3
6 to 7	5
7 to 10	4
10 to 20	4
20 to 30	3
varied	22

What type of reports were prepared?

None	8
Case report to parents and/or teachers	39
File kept	3
Report to:	
patients	1
referring agencies	29
school only	1
school and/or physician	7
speech correctionist	1
supervising staff only	3

How was follow-up accomplished?

None	13
Correspondence	15
Continued training	12
Conferences with parents or teachers	4
Re-check personal interviews	15
Reports from schools	11
Reports from refer agency	9

With what agencies has a follow-up relationship been maintained?

None	21
Civic service clubs	2
County Bur. of Pub. Assist.	2
Denominational organizations	3
Hospital	1
Pub. Health Nursing Service	5
Red Cross	1
Schools	21
Social service agencies	4
Soc. for Cripp. Child.	7
State Bur. of Child Guid.	2
State Dept. Education	7
State Cripp. Child. Assoc.	2
State Pub. Health Dept.	6
State School for Deaf	2
State Welfare Dept.	6
Univ. Div. of Serv. for Crippled Children	4
Veterans Administration	5
Vocational Rehab. Bureau	7

What opportunities were there for parent counseling?

None	7
Daily class for parents	5
Parent conferences	46
Parent lectures	9
Parent observations	9
Parents serve as assistants	2

Was correspondence material available?

Yes 27 No 49

Was a catalogue or descriptive material available?

Yes 25 No 51

From what sources did the program derive support other than from fees?

Charity groups
Community chest
Easter seal sales
Gifts or grants
Junior League
March of Dimes Foundation
Service clubs
Soc. for Cripp. Children and Adults
State Bureau of Rehabilitation
State Dept. of Health
State Dept. of Pub. Instruction
State Welfare Department
State Soc. for Cripp. Child.
Trust Funds
Veterans Administration
Vocational Rehabil. Bureau

Objectives and Advantages

What were the objectives of this summer rehabilitation program? (The following statements were extracted from the collected questionnaires.)

Speech rehabilitation for trainees. Opportunity for teacher-training and observation. Therapy for pre-school children. Parent education. Provide a community service not otherwise available. Demonstrate group techniques in speech correction. Modify the home environment. Psychosocial adjustment of the trainees. Provide speech correction for children unable to receive it during the rest of the year. Lip reading training. Listening training. Development of language. Research. Provide academic help. Remedial reading. Well-rounded recreational program integrated with the speech program. Improved health. Utilization of residual functions. Demonstrate need for speech correction in the area. Provide an intensive program of speech correction. To supplement school speech correction work. To teach relaxation.

What were the advantages of this program over other types of summer programs? (The following statements were extracted from the collected questionnaires.)

Children were able to live at home and apply what they learned in that environment. A larger number of children were available for teacher-training material. No charges made the program accessible to all children. Provides opportunities for closer working relationship with other clinics. Parents are required to attend all sessions. Parents are assigned tasks to complete at home. Twenty-four hour control of speech environment of children. Provides a full school program with a speech-hearing centered curriculum. Provides opportunity for remedial reading along with speech training. Is part of a year-round program. Provides a center where children can learn to use hearing aids. Provides ideal opportunity for care of trainees while away from home. Out-of-class activities develop abilities in athletics and social activities. Provides experience in group living giving opportunities for development of leadership and self-direction. Provides staff with opportunity for closer contact with enrollees. Is a time when high school students can attend a speech training pro-

gram. Is the only teacher-training program of its kind in the area. More freedom of operation of program than during the year. Can get services of speech specialists from out of state during summer. Provides opportunity for cooperation of state and local agencies. Provides opportunity for small homogeneous group training.

ORGANIZATIONS REPRESENTED

Arizona

Arizona State College
Lydia H. Newton
Phoenix, Arizona

California

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Donald A. Schultz
Van Nuys, California

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College of the Pacific
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A Translation Of Broca's Original Article On The Location Of The Speech Center

Jules Kann

(The following article is a translation of Broca's original description of his discovery of the location of the speech center and the presentation of his now famous case of aphasia to the Anthropological Society in Paris in 1861. The article, entitled 'Remarques sur le siège de la faculté du language articulé, suivi d'une observation d'aphemie,' appeared in the *Bulletin de la Société Anatomique*, 1861, 6, 330-357, and is here printed in its entirety except for deletions concerning neurological descriptions of minor interest here. The author, Paul Broca (1824-1880), born in Sainte-Foy-la-Grande, founder of the school of Anthropology in Paris and surgeon of the Bicetre Hospital, by the presentation of this paper laid the foundation stone to a new theory of cerebral localization, somewhat in opposition to Flourens' theory of the unity of the nervous system. Although this is Broca's original article it has never been translated into English and might be, since the renewed interest in brain localization of speech problems, of some general interest.)

Remarks on the Seat of Spoken Language, Followed by a Case of Aphasia

Paul Broca

This work and the subsequent case which I am here presenting support Mr. [Jean B.] Bouillaud's ideas on the seat of the faculty of language. This question, which is both a physiological and a pathological one, merits more attention than most physicians have been willing to accord it. It is a very delicate matter, very obscure, and somewhat complicated; in fact, so much so that I feel I should make some introductory remarks before going into the fact which I have observed.

It is known that phrenologists place the ability to speak in the area slightly anterior to the brain, in one of the convolutions resting on the orbital arch. This opinion which had been accepted without sufficient proof, and which rested on a very imperfect analysis of the phenomenon of language, would doubtlessly have disappeared with the rest of the system, had Mr. Bouillaud not rescued it from the shipwreck, by making large modifications and by surrounding it with a halo of proof borrowed mainly from pathology. Without considering language a simple phenomenon depending on a single cerebral organ and without attempting to circumscribe the organ within a space of a few millimeters as Gall had done, this professor [Bouillaud] was led to admit by numerous clinical facts, followed by autopsies, that certain lesions in the hemispheres abolish language without destroying intelligence and that these lesions always occur in the frontal lobes of the brain. He concluded that somewhere in those lobes, there are one or more convolutions which dominate some essential element

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of speech and then, without any further specification, he placed in the frontal lobes the faculty of spoken language which should not be confused with the general faculty of language as such. There are indeed several kinds of language. Any system of signals permitting the expression of an idea in a more or less intelligible, complete or rapid manner, is a language in the most general sense of the word: speech, mimicry, shorthand, figurative writing, phonetic writing, etc., are all respectively types of languages.

There is a general faculty of language which presides over all modes of expression of thought, and which may be defined as the faculty to establish a constant relationship between an idea and a signal, whether this signal be a sound, a gesture, a figure, or any type of tracing. Furthermore, each type of language necessitates an organ of 'emission' and an organ of 'reception.' The organs of reception are the ear, eye, or even sense of touch. Organs of emission are set into play by voluntary muscles, as those of the larynx, tongue, face or upper extremities, etc. All regular language supposes then an integration of: (1) A certain number of muscles, their respective motor nerves and the central organ from which these nerves arise. (2) A certain external sense organ, the sensory nerve leaving it and the area of the central nervous system in which the nerve ends. (3) Finally that area of the brain controlling a general faculty of language as we have defined it.

[After this definition Mr. Broca continues his introduction with general remarks which are of minor interest here. Following is the actual report to the Academie of a case of aphasia or, as Broca calls it, aphemia. Case: Aphemia for 21 years, produced by chronic and progressive softening of the second and third convolutions of the superior part of the left frontal lobe.]

On April 11, 1861, the general infirmary of Bicetre, Surgical Service admitted a man, 51, named Leborgne, suffering from a gangrenous condition of the lower right extremity, extending from the toe to the groin. To all the questions which I put to him concerning the origin of his illness, he answered only by the monosyllabic 'tan' repeated twice in succession and accompanied by a gesture of the left hand. I looked for more information on this man who had lived at Bicetre for 21 years. We interrogated his superiors, the comrades of his division and those relatives who came to see him, and here is the result of our inquiry: Since early youth, he had had attacks of epilepsy, but he was able to become a lastmaker and remained thus until he was 30 years of age. At that time, he lost his ability to speak and was therefore admitted to the hospital at Bicetre. It was not known whether the loss of speech came about slowly or suddenly or if any other symptom accompanied the onset of the disorder. When he arrived in Bicetre, he had not spoken for two or three months. He was perfectly well oriented and intelligent and did not differ from a healthy man expect in the ability to speak. He walked about the hospital where he was known as 'Tan.' He understood everything said to him; even his hearing was excellent; but no matter what question was addressed to him, he always answered: 'tan, tan' accompanied by various gestures designed to make himself understood. When his interrogators did not understand his mimicry, he became easily angered and

added to his vocabulary an oath, the same mentioned before when discussing the case of Mr. [Ernest] Auburtin. 'Tan' was regarded as egotistical, vindictive, mean, and his comrades, who hated him, accused him of being a thief. These traits may have been due to his cerebral lesion, anyhow, they were not pronounced enough to be called pathological; and although the patient was at Bicetre, we never thought to put the patient into the psychiatric division. He was regarded as a man who was perfectly responsible for his acts.

It is clear that the patient was suffering from a progressive cerebral lesion, which was very small at the beginning of the illness and did not affect organs of movement or sensitivity. In the first 10 years it had spread to one or more organs of movement but had left the organs of sensitivity intact; later general sensitivity had lessened at the same time as his vision diminished, especially in his left eye. The paralysis and loss of sensitivity being on the right, the lesion had to be in the left hemisphere.

It was now a question of determining accurately the original lesion and although the last session of the Société d'Anthropologie had thrown some doubt on the theories of Mr. Bouillaud, I wanted to argue the question as if his theories had been verified, for that is the best way to prove a point. [Mr. Auburtin, who had announced that he would change his theories if he saw one case of aphemia with involvement of the anterior lobes was called in and confirmed the diagnosis.]

In order to complete the diagnosis, I argued that the corpus striatum is the closest motor organ to the anterior lobes. Doubtlessly the lesion had spread to this area and caused the hemiplegia. The probable diagnosis was then: primary lesion of the left anterior lobe, spread to the corpus striatum on the ipsolateral side. All facts pointed toward a slowly progressing softening and in the absence of pressure, the diagnosis of intracranial tumor was excluded.

The patient died on the 17th of April at 11 o'clock in the morning. Within 24 hours an autopsy was performed. The temperature outside was not high and the corpse had not putrified. The brain was shown a few hours later to the Société d'Anthropologie and then put into alcohol. The organ had undergone such change that it was difficult to preserve it and it took several months and several changes of liquid until it began to become firmer. Today, in excellent condition, it is exhibit 55 in the 'Dupuytren Museum.'

[Some neurological findings are discussed.]

The anatomical inspection shows that the lesion was still progressing when the patient died. This lesion had progressed very slowly, since it took 21 years to destroy a small cerebral area. It may be assumed then, that at the beginning there was a long period during which it did not surpass the limits of the primary locus of infection. Also, we have seen that this locus is situated in the frontal lobe, probably in the third convolution. This led us to believe that from the point of view of pathology there were two periods: one in which a single convolution was affected (third frontal); the other in which the disease progressed to other areas.

If we examine now the succession of symptoms we also find two periods: a first period which lasted 10 years during which language was lost and all other functions of the brain

were intact; and a second phase of 11 years during which at first partial, then complete, paralysis successively invaded the upper and lower extremity of the right side. It is impossible to overlook the fact that a relation exists between the two anatomical periods and the two symptomatic periods. The second clinical period corresponds to the second anatomical period, that is, that time when the softening had gained the insular lobe and corpus striatum. The first period of 10 years then, characterized clinically only by aphasia corresponds to the period when the lesions were still limited to the frontal lobes. Until now, in drawing a parallel between lesion and symptom, I have spoken neither of intellectual disturbances nor of their anatomical causes. We have seen that the intelligence of our patient, perfectly preserved for a long time, had notably declined. We find, in the autopsy, changes which were sufficient to explain this state. Three out of four frontal convolutions had been affected by the lesion. Almost the entire frontal lobe had more or less softened. Finally the entire mass of convolutions of the two hemispheres had atrophied and had become much softer than in their normal state. It is difficult to understand that the patient was able to preserve any intelligence at all, and it seems improbable that one could live for a long time with such a brain. I, for one, feel that the general softening of the left frontal lobe, the general atrophy of the two hemispheres, and the chronic general meningitis were lesions of standing. I feel that these short lesions had started a long time after the softening of the corpus striatum, and that one could subdivide the second period into two secondary periods.

	Lesion	*Symptom*
Period 1 (10 years)	Softening of frontal convolution	Aphasia
Period 2	(a) left corpus striatum affected	(a) Paralysis
	(b) softening of entire frontal lobe–general cerebral atrophy	(b) Loss of intelligence

These facts which are questions of doctrine cannot be exposed with enough detail nor discussed carefully enough. I need to excuse myself for the dryness of the description and the length of the discussion. I have only a few words left to sum up the consequences of my observation.

(1) Aphemia, that is, loss of speech was the consequence of a lesion in one of the anterior lobes of the brain.

(2) Our observation confirms the opinion of Mr. Bouillaud who had assigned to these lobes the seat of spoken language.

(3) The observations, at least those that are accompanied by a clear and concise anatomical description are not sufficient to consider this localization of a particular faculty in a particular lobe as having been definitely demonstrated, but it may be considered as extremely probable.

(4) It is a much more doubtful question whether the faculty of spoken language depends on the entire anterior lobe or more specifically on one of its convolutions, in other words the question is whether the cerebral faculties are arranged by faculty and by convolution or only by groups of faculties and by groups of convolutions. Further observations should be made to solve this question. In order to do that, one must indicate exactly the name and number of the convolution affected, and, if the lesion is very extensive, to find as soon as

possible by anatomical examination the point or rather the convolution where the illness seems to have started.

(5) In our patient the primary seat of the lesion was in the second or third frontal convolution, more probably in the latter. It is possible then, that the faculty of spoken language is located in one or the other of these convolutions. We cannot definitely establish which, since the localization by convolution does not rest on a certain basis as yet.

(6) In any case, it is sufficient to compare our observation with those which preceded it to discard the idea that the faculty of spoken language resides in a fixed point and may be located in any bump on the head. The lesions of aphasia have most often been found in the most anterior part of the frontal lobe, not far from the eyebrow and above the orbital arch; in my patient they were slightly posterior and closer to the coronal suture than to the rim of the brow. This difference of locus is incompatible with a system of phrenology. It would be perfectly reconcilable with a system of localization by convolution since each of the three large convolutions of the upper part of the frontal lobe cuts across all the regions where the lesions of aphasia have been found to date.

A Preliminary Report Of A Diagnostic Test For Aphasia

Joe R. Brown
and
Hildred Schuell

AT THE Veterans Administration Hospital in Minneapolis, in conjunction with acute and rehabilitation neurologic services, the development of an Aphasia Center was anticipated. A program was planned which would encompass diagnosis, treatment and research in aphasia and related disorders in close correlation with the work in other portions of the neurology section. Essential to such a program was an aphasia test which would meet four specific needs: (1) the recording of data adequate for studies of cerebral localization; (2) objective sampling of language performances in a uniform and detailed manner; (3) the determining of an individualized regimen of speech therapy; and (4) measuring the progress of a patient under treatment. There was not available any test instrument which would meet all of these requirements satisfactorily and for that reason a test was designed to attempt to meet these needs. The organization of the test was dictated by these various needs.

Localization. There has long been considerable variance of opinion as to the amount of localization of speech functions. A few facts, however, have met with rather general agreement. Lesions in certain portions of the left hemisphere seriously interfere with adequate voluntary speech in the great majority of right-handed people. Areas which are essential for adequate tactile, visual, auditory and motor functions are similarly well established. It is in the fields of comprehension and formulation of language that the greatest differences of opinion occur. The authors believe that careful study of the speech abilities and disabilities of aphasic patients plus correlation with neurologic, laboratory and anatomic findings is a sound scientific procedure. They further believe that it is an essential step in furthering knowledge of aphasia and cerebral function. It is such studies that will make it possible, for example, to understand the effect of a lesion of a pure sensory area on a patient's ability to express himself by language.

In organizing the test, an attempt was made to avoid being influenced by preconceived ideas of cerebral localization or by standard categories of aphasic disabilities. Every effort was

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made to achieve working definitions of the various aspects of language and language impairment. Next, the construction of the test was designed to facilitate the study of the impaired relationships between various language components. Finally, because of anticipated variation in the severity of defects, each language component was sampled with tests of increasing difficulty.

Objectivity. In developing a research program it was considered important to have available a test instrument which would sample language performances in as objective a manner as possible. Uniform results when administered by different examiners and standard recording of the findings were considered as essential. Such standard recording helps to establish the degree to which each language component is disturbed. At the same time, the need was recognized for recording subjective impressions.

Requirements for Therapy. A detailed sampling of the various language components and a study of their interrelationships can be a great aid in planning a therapeutic regimen. Organizing the test on the basis stated would indicate in which ways the patient's language functions were most deficient and also would suggest the degree of impairment. At the same time, it would indicate to the therapist what residual language abilities were available to use as an approach in retraining.

Measuring Progress. To measure progress of a patient with the passage of time and under a therapeutic regimen, objectivity of the test was essential. In addition, it would appear important that the sampling of each language component be carried out in a progressively more difficult manner. The testing should be severe enough to detect all aphasic patients but should be readily passed by normal persons. It appeared inevitable that some nonaphasic brain-damaged patients would make errors in some of the more complicated language performances.

Test Organization

Determined by the foregoing factors, the test gradually evolved. A year was spent in selecting, testing and revising individual items, on the basis of practical application of the test. In its present form the aphasia test has been divided into four parts based on four major levels of performance: primary associations, symbol associations, elaboration and conceptual processes. In addition, provision has been made for recording other findings of significance, such as perseveration, paraphasia, emotional lability, and so forth. Sample test items are presented later in this paper.

Part I: Primary Associations. The language components tested at this level are broken down into recognition and movements. Ability to recognize objects, sounds, language symbols and so forth is tested by matching to establish as clear definition as possible. Defects in this sphere are known as 'agnosia.'

Motor ability at this level is tested by imitation of speech movements and sounds supplemented by observation of nonspeech movements of the tongue, lips, jaw, palate and pharynx. Motor speech defects at this level are called 'speech apraxia.' Motor performances required for writing are tested by copying.

Part II: Symbol Associations. This level of performance is somewhat more complex. On the receptive side it requires the ability to associate the label seen or heard with the appro-

priate object, symbol or event. On the expressive side it is the ability to name objects, symbols and events. This testing is done in considerable detail and may be supplemented by a complete test for recognition of body scheme. Defects in this sphere might be considered as association defects and may be receptive, expressive or both.

Part III: Elaboration. Testing the various language components at this level is divided into three parts: simple comprehension, simple language formulation and simple conceptual processes. It appeared that these were of about equivalent complexity. Simple comprehension is defined as the ability to comprehend the significance of language and language symbols of a rather simple type. It is tested by eliciting nonverbal responses to simple questions and commands, either spoken or written, checking for recognition of errors in simple sentences and noting whether or not the patient gets the meaning of words, sentences and paragraphs. A defect at this level would be considered a simple semantic defect.

Simple language formulation (spoken and written) is defined as the ability to find and properly formulate words, phrases, sentences and simple paragraphs. It includes the requirement of accomplishing this volitionally, and that the language formulated express the patient's concepts reasonably adequately. Such abilities as responding to familiar questions, finding verbs and completing sentences are tested. More difficult tests, such as forming simple sentences, describing a picture and retelling simple stories, are included here. The term 'simple formulation defect' describes findings in this area.

Difficulties with simple concepts appeared to belong at this level of elaboration although they are not, strictly speaking, defects of language. Abilities tested included nonverbal performances requiring abstractions and temporal and spatial relationships. Standard tests, including the Goldstein-Scheerer-Color-Form Test (2), block-tapping and the Wechsler Object Assembly, are utilized. In addition simple numerical and arithmetic processes are studies. 'Simple conceptual defects' is a suggested descriptive term for disabilities in this sphere.

Part IV: Conceptual Processes. This level of performance requires normal comprehension of language, the ability to abstract and develop concepts and the power to formulate these concepts into spoken or written language. Nonaphasic brain-damaged patients might have some difficulties with this portion of the test.

At this level auditory comprehension is studied by reading a rather complex passage to the patient. The patient is then tested by asking him questions and by having him retell the story in his own words. Visual responses are tested by means of his responses to rather complex printed material which he reads. Complex language formulation is tested by utilizing oral opposites and the Binet vocabulary, and by having him give verbal responses to requests for specific information (for example, 'Describe the house you live in.') Written language is tested at this level by having the patient write to dictation and write half a page telling about his illness. Language formulations involving abstract concepts are studied by means of oral absurdities, map using, metaphors, codes, abstract words, similarities and proverbs. Complex concepts are further tested by means of calculations. A patient may show complex semantic defects, complex formula-

tion defects and complex conceptual defects at this level of testing.

It is apparent that many aphasic patients would fail completely at this level of testing. For this reason the test is so constructed that the simpler portions of the test battery are given to all patients, while the more complex parts are reserved for those aphasic patients with considerable remaining language performance.

Problems of Test Construction

Testing to Limits. Preliminary exploration indicated that items geared to ninth grade level revealed specific impairment even in intelligent and highly educated aphasic patients who had retained what might superfically appear to be normal language function. It is always possible to explore further in any desired area by means of standard intelligence and achievement tests when this is indicated. A comparison between the performances of aphasic patients and those of brain-damaged patients without aphasia is projected. It is anticipated that these groups will show some similarities, but that significant qualitative differences may appear. It is obviously impractical to attempt to test limits with an aphasic test battery. Adequate, detailed and specific sampling of language performances, however, is possible.

Validity. Evidence of validity would be obtained if the test were shown to reveal significant differences in performance between matched populations of aphasic and normal persons. It is reasonably sure that the battery does this at present, but statistical validation must necessarily be deferred until test revisions are completed.

Reliability. The split-halves method is considered to be a workable procedure for establishing reliability. There are some indications that aphasic performances may be less variable than has sometimes been supposed. Experience with the test so far suggests that although there is variability in relation to individual responses, the percentage of correct responses to an adequate group of items tends to remain comparatively stable. Test results correlate consistently with clinical evaluations, both those by the hospital staff and reports from other clinics received on admission of patients.

Scoring and Weighting of Items. The initial scoring and weighting of items were done arbitrarily. When enough records are obtained it will be possible to determine the standard deviations of items on each scale, and in this manner discover artefacts which may be operating to weight some items unduly. In the final weighting the necessity for considering the relative importance or unimportance of a specific disability in relation to total language functioning cannot be disregarded; therefore the final weighting will necessarily again be determined in part by clinical judgment.

Clinical Interpretation. Finally it is considered that no test for aphasia can be devised which will obviate the need for good clinical interpretation. Although uniform testing is important, it is always necessary to know why the patient failed, and on the other hand to observe the processes by which he achieved a correct end result. Such observations are not only significant for diagnosis and therapy, but essential in order to avoid misinterpretations of clinical findings.

The aphasia battery described is considered by the authors to be still in an imperfect form. At the present time it occupies a total of 44 type-

written pages. For these reasons it is not possible to consider publication at this time. To give a concrete illustration, of the organization of the test, however, examples have been chosen from each level tested. The samples all are related to the auditory channel. Although not illustrated here, visual and tactile channels are investigated in a comparable manner. The same principles and organization are utilized to test language formulation and expression as well as verbal and nonverbal conceptual processes.

PART I (PRIMARY ASSOCIATIONS)

A-1 Auditory Recognition

1. *Responds to Voice* *Score 30*
   a. Hello 15
   b. How are you? 15
   (Score correct if patient looks toward you, smiles, nods head, makes sound, or in any way responds to the sound of your voice.)
2. *Responds to Name* *Score 30*
   a. Is your name _____ _____?
   (Score correct if patient smiles, nods, makes sign of assent, or shows recognition in any manner. If he does not, wait until a little later in the test, and try speaking his name again.)
3. *Recognizes Source of Sound* *Score 30*
   a. Bell 5 d. Paper rustling 5
   b. Coin 5 e. Tapping pencil 5
   c. Comb 5 f. Whistle 5
   (Display all objects at once, in foregoing order. Demonstrate sound of each. Then ask patient to close eyes, and screen objects with a card. Present sounds in order *bdfcae*. If patient makes errors, repeat demonstration, then give retrial. Score second trial.)
4. *Recognizes Familiar Song* *Score 10*
   a. Hum or whistle *America*.
   b. Do you know that song?
   c. Is it *Old Black Joe—Yankee Doodle —America?*
   d. Can you hum it with me?
   (This item is scored correct if patient shows recognition of the tune in any way. If he does not, sing a few bars of *The Star Spangled Banner*, and ask 'Is that the same song?' Score item correct if he answers negatively. Describe patient's performance.)

PART II (SYMBOL ASSOCIATION)

C-1 Auditory Association

(Show me the pencil, and so forth)

1. *Inanimate Objects*
   a. Box
   b. Comb
   . . . . . .
   f. Spoon
2. *Parts of Object*
   a. Handlebars
   b. Headlight
   . . . . . .
   f. Wheel

Note: The same technic is used in testing auditory association for pictures of animate objects, body parts, colors, forms, letters and numbers.

PART III (ELABORATION)

E-1 Auditory Comprehension

1. *Familiar Questions* *Score 16*
   a. What is your name? Is it Ericson, Nelson, _____?
   b. Where do you live? Do you live in Chicago, Denver, _____?
   . . . . . .
   h. Who is President of the United States? Is it Roosevelt, Truman, George Washington?
2. *Simple Directions* (may repeat once) *Score 20*
   a. Open your mouth. 2
   . . . . . .
   i. Give me the penny, and put the comb and the spoon in the box. 3
3. *Finding Errors* *Score 20*
   (Read sentence aloud, then ask, 'Is that right?' Sentence may be repeated once. Score only those which contain errors.)
   a. You eat with a knife, fork and comb. 4
   . . . . . .
   i. Minnesota has many forests, lakes and coral islands. 4
4. *Paragraph Comprehension* *Score 43*
   (Read passage aloud, and present question. The first passage may be repeated, if necessary. Divide the score in half, if passage is read twice. Do not repeat other passages.)
   a. There is an apple tree on the hill. Robins have a nest in the tree. There are four blue eggs in the nest. Soon there will be four baby birds.

1. Where was the apple tree: in the woods, on the hill, in an orchard? 2
2. What kind of birds had a nest in the tree: woodpeckers, robins or blue jays? 2
3. What color were the eggs in the nest: blue, brown or white? 2

Note: There are two additional slightly more complex items in this portion of the test.

PART IV (CONCEPTUAL PROCESSES)
H-1 Auditory Comprehension (Complex)

1. *Comprehending Significance* *Score 50*
(The passage is read aloud and questions are asked. The patient is told that questions will be asked about it. He may be told first that it is about *Mont San Michele,* which is just a name.)

Mont San Michele is an island off the coast of France. It looks like a huge castle rising from the sea. In the Middle Ages, it was a pirate stronghold. The island is surrounded by an ancient stone wall. Outside the wall lies a narrow beach, dangerous because of quicksand. Inside, houses crowd against the wall, and cobblestone streets climb the hill to the cathedral, whose spires are silhouetted against the sky. Excavations have shown that at least seven churches have stood upon the same site. Guides show the ruins to travelers who wish to explore them.

a. Where is Mont San Michele? Off the coast of Norway, South America or France?
b. Who lived there in the Middle Ages? The King of France, pirates or Norsemen?
c. What surrounds the island? A cobblestone street, hills or a wall?
d. Why is the beach dangerous? Because of sharks, pirates or quicksand?
e. How many churches have stood on the same site? 7-11-14?

2. *Auditory Retention* *Score 50*
(Read aloud, and ask patient to retell, in own words. 15 memories, 3 points each. Additional 5 points if patient includes fact that Columbus was looking for a route to the East when he discovered America.)

A long time ago / people believed that the world was flat. / They thought that if you sailed far out into the ocean, you would come to the end of the world / and fall off. / Some people thought that there were huge monsters / in the sea / which would destroy any ship / that dared to sail too far from land. /

Columbus believed that the world was round, / but he believed that it was smaller / than it is. / He thought that if he sailed straight west / across the Atlantic / he would reach the rich countries / of the Far East. / Finally Isabella / Queen of Spain / listened to Columbus / and gave him ships for the voyage. / Columbus never reached the Far East, / but he found a new continent, / which was later / called America. / Queen Isabella was disappointed / because Columbus did not bring her silks and riches / from China. /

PRELIMINARY FINDINGS

At present the results are tentative at best, and dependable findings must await further refinement of the instrument as well as testing of more patients.

Body Parts. Patients were observed who showed no difficulty in identifying objects, but who made more or less consistent errors with parts of the body. Whether these errors could be accounted for by physical disorientation or by the inability to recognize parts of a whole, was not determined. Therefore, items were added testing the patient's ability to identify parts of a bicycle. The present indications are that there is no correlation between errors appearing on the two groups of items, a fact which suggests the existence of specific impairments of body scheme. In some cases, however, a correlation does appear between errors on body parts in one portion of the test and errors in drawing a man and those in the Wechsler Object Assembly Tests, in the other.

Anomia. The existence of anomia, involving the assumption that the ability to use nouns would be impaired specifically, was also questioned, and items were included which required a specific response of an adjective or

a verb. Results tend to confirm the impression that the impairment is of the ability to find or select *any specific word* voluntarily, regardless of part of speech. Thus the patient who identified 'razor' as 'what you shave with,' when asked what you do with a razor replied, 'well, on your face.' It begins to appear that the concept of *anomia* cannot be defended but that the impairment is part of a general defect in word finding.

Prognosis. Comparison of initial records of patients with the results on retesting should yield information valuable for prognosis. Preliminary findings tend to suggest that in an adult, the kinds of disabilities present initially may be of more importance than age. Results so far suggest that impairment of auditory comprehension may be highly significant. This is not in agreement with the statement sometimes made that a good recovery is indicated when the principal impairment is found in the area of auditory comprehension. It has been observed that the patient with defective auditory comprehension learns to respond adequately to specific situations, to meaningful cues and to relearned isolated words, but continues to show impairment on detailed testing. In spite of good response to a situation, he may still agree for example that he eats with a knife, fork and comb, or that Columbus discovered America in 1942.

Sensorimotor Involvement. Preliminary testing tends to confirm the hypothesis stated by Jackson (*3, 4*), Wilson (*8*), and others, that aphasia is a sensorimotor disturbance and that defects of both sensory and motor nature remain throughout the entire recovery or relearning period. In order to talk meaningfully about sensory aphasia and motor aphasia, or expressive and receptive aphasia, it is necessary to produce records of patients adequately tested who show impairment in one area and not in the other. Weisenburg and McBride's method of identifying the area of greatest impairment (*6*) is of course legitimate, if it is clearly understood that this is what is being done. Examination of 65 patients suggests closer agreement with the views of Jackson (*3, 4*), Sherrington (*5*), Wilson (*8*), Walshe (7) and others, who consider that cortical structure is a complex elaboration of the primary reflex arc between the sensory and the motor root cell, and that even hemiplegia must be regarded as an impairment of a sensory-driven motor mechanism. According to Walshe (7), Bartlett (*1*), and others, the so-called sensory flux not only initiates but guides and controls voluntary performances throughout their course. This is particularly true in relation to what Bartlett calls 'educated skills,' such as language. Detailed observation of aphasic or even apractic performance seems to indicate that some such postulate is required to account for many of the observed phenomena.

It is our impression that severe sensory speech defects must inevitably impair the normal function of an intact motor mechanism. It is likewise probable that motor speech defects interfere with adequate speech comprehension.

Correlations Between Impairment in Various Areas. Many more data are required before one can make meaningful statements about correlations between impairment of various areas of language functioning, but it is expected that this will be a fruitful field of investigation. For example, to what extent does impairment of the ability to assume an abstract attitude cor-

relate with impairment of auditory comprehension, or the ability to formulate language? Does the patient fail because he does not adequately understand instructions, or because he cannot formulate the task to himself? What is the role of the inability to make a voluntary choice or selection, a phenomenon reported by some patients manifesting paraphasia? To what extent does comprehension of language correlate with the amount of language which is available to the patient, vocabulary, the ability to find specific words, and to use language propositionally? These and other questions will have to await the testing of more patients.

No attempt has been made up to the present time to correlate the results of this test with detailed localization of the lesion as observed by other means. Tentative correlations with clinical, electro-encephalographic, surgical and necropsy findings, are still so limited in number, that it is not yet possible to report them.

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A Rating Scale Study Of Conditions Under Which Stuttering Is Reduced Or Absent

Oliver Bloodstein

THE PROBLEM with which this research was directly concerned was that of determining the conditions under which stutterers report their stuttering to be reduced or absent. With regard to each of these conditions answers were sought to the following: What percentage of stutterers indicate their stuttering as reduced, and to what extent do they report their stuttering to be reduced?

PROCEDURE

In all, 204 stutterers served as subjects for this investigation. They ranged in age from 16 to 44 years, the mean age being 23.4. Subjects between the ages of 17 and 25 constituted three-fourths of the group. Sixteen were female and 188 were male. All were receiving remedial training for their stuttering at the time they served as subjects. Fifty-eight, including all of the 50 who were interviewed, were attending the State University of Iowa Speech Clinic. The remaining 146 were reached at a number of other speech clinics.

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Information for the major portion of this study was elicited from 50 stutterers in personal interviews. Each interview was conducted on the basis of a list of 115 conditions under which reductions in stuttering might be expected to occur. Almost all of these items were obtained by a study of the literature on stuttering (*1*). A few were suggested by clinical observation of stutterers at the State University of Iowa Speech Clinic.

As each item was presented, the subject was instructed to rate his stuttering in that particular situation on a scale from 1 to 4, as follows: 1. As much stuttering as usual, or more stuttering than usual; 2. Definitely less stuttering than usual; 3. Hardly any stuttering, or very markedly less than usual; 4. No stuttering at all; no tendency to stutter. All subjects were instructed not to attempt to rate their stuttering in any situation which they had never experienced. They were also instructed not to rate their stuttering as reduced in any situation if this reduction was brought about only through the use of special tricks or devices for avoiding stuttering.

After the subject had rated his stuttering in a given situation he was asked to cite specific experiences on

the basis of which he had made the rating. He was also encouraged to indicate any important exceptions, and to elaborate on any other reactions which he had to the item. At the close of the interview the subject was asked if there were any other conditions under which his stuttering was reduced or absent.

In a supplementary study of some of the conditions investigated in the interviews, questionnaires were filled out by 154 additional subjects.[1] The questionnaire contained a selection of 23 of the items which appeared to be of somewhat more than ordinary interest. The instructions accompanying the questionnaire were essentially the same as those received by the subjects who were interviewed.

Comparison of Interview and Questionnaire Techniques

In order to determine the confidence with which the questionnaire could be used as a valid substitute for the interview for these 23 items, 35 of the 50 subjects who were to be interviewed were first asked to fill out questionnaires. The time elapsing between questionnaire and interview ranged from three to 123 days, the average interval being 30 days. The essential finding was that on the average item about half the subjects, when interviewed, changed their original rating on the questionnaire, for the most part by one scale-point. Subjects' comments recorded in the interviews appear to indicate that the chief reason for changes in ratings was the opportunity which the interviews afforded for clarification of items, for reiteration of instructions, and for taking into account subjects' qualifications of their responses.

The 23 items which were studied both by interview and by questionnaire were later compared on the basis of the percentage of subjects in each group rating the items either 3 or 4. On eight of the items, the percentages obtained from the questionnaires and from the interviews of subjects reporting little or no stuttering show much larger disparity than the other 15 items thus compared. These eight items are shown in Table 1 along with the percentage of subjects in each group rating the items either 3 or 4. Arrangement is in descending rank order of size of disparity. On the basis of the obviously large differences, these items are regarded with suspicion.

The comments of the 35 subjects, previously mentioned, who were asked to fill out questionnaries and were later interviewed, indicate that the interview data alone are to be preferred over the composite results of interviews and questionnaires in the instance of at least four of these items. With regard to 'speaking to slight acquaintances of the opposite sex' the preliminary study revealed a marked tendency for subjects filling out questionnaires to disregard instructions not to indicate their stuttering as reduced if the reduction was

[1]The writer is indebted for their cooperation in this regard to the following individuals: Mr. Thomas B. Abbott, Cleveland Speech and Hearing Center; Dr. Grant Fairbanks, then at the University of Southern California; Mr. Philip J. Glasner, Johns Hopkins Hospital; Dr. Robert Harrington, then at the University of Denver; Professor Harry J. Heltman, Syracuse University; Dr. Ernest H. Henrikson, University of Minnesota; Dr. Claude E. Kantner, Ohio University; Dr. Lou Kennedy, Louisiana State University; Dr. A. C. LaFollette, Ohio University; Dr. Paul Moore, Northwestern University; Dr. Carl H. Ritzman, University of Oklahoma; Dr. Mack D. Steer, Purdue University; Miss Katherine F. Thorn, then at the University of Minnesota; Dr. Charlotte G. Wells, University of Missouri.

TABLE 1. Percentages of stutterers indicating ratings of 3 (Very markedly less or hardly any stuttering) or 4 (No stuttering at all) for eight items in interviews and on questionnaires on which the disparity of percentages is so great that the items should be regarded as suspect.

Item	*Interview*		*Questionnaire*	
	*N**	*%*	*N**	*%*
When acting a part in a play	27	74.0	85	34.1
When repeating a word on which you have just stuttered	47	72.3	152	44.1
During rather regularly recurring periods of relative fluency	50	50.0	154	22.1
Speaking a foreign language which you acquired after having learned English	32	3.1	95	28.4
Speaking to a slight acquaintance of the opposite sex	46	26.1	152	45.4
Speaking to a slight acquaintance of your own sex	46	17.4	151	36.4
When very sure of the soundness of what you are saying and eager to convince listener	48	20.8	151	39.7
In oral reading, with someone else present	50	12.0	154	26.0

*Number of subjects rating item.

brought about by the use of tricks or devices for avoiding stuttering. With regard to 'repeating a word on which you have just stuttered' some subjects construed the item to mean repeating the word after finishing the sentence, or later in the conversation, until this point was clarified in the interviews. Concerning 'acting a part in a play' it was found that, contrary to instructions, the questionnaire data were weighted by responses of 'as much stuttering as usual, or more' made by subjects who had never acted a part in a play. In the case of 'oral reading with someone else present' it was discovered in the interviews that many of the substantial reductions in stuttering reported actually occurred only 'among friends,' or when 'well prepared,' or when reading 'easy' material.

For the remaining four disparities no choice between interview and questionnaire data seems clearly indicated, except in so far as it may appear from the preliminary study that the interview procedure made for more cautious responses and permitted reiteration of instructions and clarification of items.

RESULTS

The results obtained consisted of subjects' ratings and all of their relevant remarks taken down as nearly verbatim as possible. The findings presented in this paper are concerned with the rating-scale data alone. A subsequent paper will be concerned with the remarks of the subjects. For each of the 115 conditions studied, Table 2 shows the percentage of subjects who indicated ratings of 1 (as much stuttering as usual, or more), 2 (definitely less stuttering than usual), 3 (very markedly less, or hardly any stuttering), and 4 (no stuttering at all). In addition, the percentage of subjects rating the item either

TABLE 2. Percentage of stutterers indicating ratings of 1, 2, 3, 4, and 3 and 4 combined for each of 115 situations (1, As much stuttering as usual; 2, Definitely less stuttering than usual; 3, Very markedly less or hardly any stuttering; 4, No stuttering at all).

Item	N*	1	2	3	4	3 and 4
Reduced Propositionality						
Reading aloud with no one else present	49	4.1	14.3	20.4	61.2	81.6
Speaking with no one else present	45	2.2	11.1	15.6	71.1	86.7
Speaking to an animal	50	0.0	6.0	10.0	84.0	94.0
Speaking to an infant	37	0.0	8.1	32.4	59.5	91.9
Oral reading†	203	57.1	20.7	15.8	6.4	22.2‡
Reciting from memory	44	34.1	38.6	13.6	13.6	27.3
Repeating sentences after someone else	37	18.9	40.5	21.6	18.9	40.5
Reading a list of words	44	47.7	25.0	15.9	11.4	27.3
Reading nonsense words	17	23.5	17.6	47.1	11.8	58.9
Making an inconsequential remark	48	8.3	18.8	39.6	33.3	72.9
Swearing in ordinary conversation	47	2.1	10.6	12.8	74.5	87.2
Repeating a word on which you have just stuttered†	199	25.6	23.6	32.2	18.6	50.8‡
Saying a word on which you are blocking when someone pronounces it for you†	191	23.6	23.0	29.3	24.1	53.4
Acting a part in a play†	112	42.9	13.4	20.5	23.2	43.8‡
Delivering a sales talk	25	44.0	36.0	12.0	8.0	20.0
When pointing to an object the name of which you want to stay	45	35.6	24.4	31.0	8.9	40.0
When you have handed the listener a written slip with the information you wish to convey	35	14.2	40.0	40.0	5.7	45.7
Minimal Negative Reaction to Stuttering						
In ordinary conversation with your mother†	194	33.5	26.3	24.1	16.0	40.2
In ordinary conversation with your father†	183	41.0	27.3	19.1	12.6	31.7
In ordinary conversation with a brother	29	37.9	31.0	17.2	13.8	31.0
In ordinary conversation with a sister	30	33.3	40.0	16.7	10.0	26.7
Speaking to your wife (or husband)	6	16.7	16.7	66.7	0.0	66.7
Speaking to your children	3	33.3	0.0	0.0	66.7	66.7
Speaking to a good friend of your own sex	49	28.6	26.5	34.6	10.2	44.9
Speaking to your girl (or boy friend)	27	14.8	33.3	33.3	18.5	51.9
Speaking to someone to whom you have been going for treatment for stuttering†	188	24.5	36.7	30.9	8.0	38.8
Speaking to a very slight acquaintance who does not know you stutter	47	55.3	19.1	17.0	8.5	25.5
Speaking to another stutterer whom you know well	41	31.7	31.7	24.4	12.2	36.6
Speaking to a stutterer with whom you are not well acquainted	41	58.5	26.8	12.2	2.4	14.6
Speaking to a blind person	10	60.0	20.0	10.0	10.0	20.0
Speaking to a deaf or hard of hearing person	34	52.9	14.7	26.5	5.9	32.4
Speaking to someone who seems to be paying little or no attention	41	48.8	26.8	22.0	2.4	24.4
Speaking to someone who seems highly interested in what you are saying	48	52.1	31.3	16.7	0.0	16.7
Speaking to someone over the telephone†	203	45.3	27.6	18.2	8.9	27.1
Reduced Need to Make a Favorable Impression						
Speaking to a stranger†	203	41.9	31.0	22.7	4.4	27.1
When in unfamiliar surroundings†	200	47.5	29.0	16.0	7.5	23.5
Giving orders or instructions in a situation in which you are in authority†	192	35.0	34.9	22.9	6.3	29.2

Item	N*	1	2	3	4	3 and 4
Speaking to someone you regard as socially inferior to you	43	25.6	44.2	30.2	0.0	30.2
Explaining something to someone you regard as intellectually inferior	40	17.5	57.5	20.0	5.0	25.0
Speaking to someone younger than you (not an infant)	49	28.6	32.7	30.6	8.2	38.8
Making an extemporaneous speech†	177	65.0	20.3	11.3	3.4	14.7
When mildly intoxicated	39	33.3	30.8	28.2	7.7	35.9
When very considerably intoxicated	25	32.0	4.0	28.0	36.0	64.0
Changes in Speech Pattern						
Speaking more slowly than usual	44	15.9	45.5	22.7	15.9	38.6
Speaking more rapidly	42	59.5	23.8	16.7	0.0	16.7
Speaking on a higher pitch	23	34.8	39.1	21.7	4.3	26.1
Speaking on a lower pitch	30	13.3	53.3	26.7	6.7	30.0
Speaking in a monotone	30	10.0	30.0	50.0	10.0	60.0
Speaking more softly	38	21.1	42.1	28.9	7.9	36.8
Speaking more loudly	43	25.6	44.2	20.9	9.3	30.2
Speaking in a sing-song manner	33	12.1	27.3	21.2	39.4	60.6
When taking a deep breath before each sentence	34	58.9	32.4	2.9	5.9	8.8
Speaking on inhalation of breath	10	50.0	0.0	30.0	20.0	50.0
Speaking through closed teeth	18	11.1	33.3	38.9	16.7	55.6
Speaking with a small object between your teeth	25	28.0	44.0	12.0	16.0	28.0
Speaking with a small object under your tongue	12	50.0	25.0	8.3	16.7	25.0
Singing	46	0.0	0.0	4.3	95.7	100.0
Whispering	46	19.6	28.3	23.9	28.3	52.2
Reading aloud in unison with others who are reading the same material	50	0.0	0.0	14.0	86.0	100.0
When assuming a bold front and speaking in a confident and boisterous manner	34	14.7	38.2	26.5	20.6	47.1
When putting on a jocular manner	31	9.7	45.2	25.8	19.4	45.2
Imitating another person's manner of speaking	36	5.6	30.6	30.6	33.3	63.9
Imitating a foreign dialect	33	6.1	24.2	39.4	30.3	69.7
Imitating a regional dialect	42	4.8	35.7	26.2	33.3	59.5
Spelling aloud	45	22.2	24.4	24.4	28.9	53.3
Accompanying Activity						
Speaking in time to a rhythmic swing of your arm	26	3.8	3.8	34.6	57.7	92.3
Speaking in time to a rhythmic twist of your hand from the wrist	17	5.9	0.0	35.3	58.9	94.1
Speaking in time to a rhythmic tapping of your foot	24	8.3	25.0	33.3	33.3	66.6
Speaking in time to walking	17	5.9	11.8	29.4	52.9	82.4
Speaking about something which you are demonstrating	44	22.7	47.7	18.2	11.4	29.5
Speaking from diagrams, graphs, pictures	30	33.3	50.0	13.3	3.3	16.7
When speaking and writing the same material at the same time	28	0.0	42.9	25.0	32.1	57.1
Speaking while playing the piano	8	25.0	50.0	12.5	12.5	25.0
Speaking while engaged in a sport	47	14.9	21.2	34.0	29.8	63.8
Speaking while dancing	45	20.0	44.4	31.1	4.4	35.6
Speaking while walking on all fours	5	0.0	60.0	40.0	0.0	40.0
Strong or Unusual Stimulation						
Reading in unison with others who are reading different material	17	17.6	5.9	29.4	47.1	76.5

Item	N*	1	2	3	4	3 and 4
When concentrating closely on what you are saying and thinking clearly about it	48	52.1	31.3	10.4	6.3	16.7
When visualizing what you are describing	40	40.0	42.5	17.5	0.0	17.5
When feeling the effects of a drug	9	44.4	33.3	22.2	0.0	22.2
During an illness	24	54.1	12.5	25.0	8.3	33.3
After an operation, during convalescence	10	90.0	10.0	0.0	0.0	0.0
When in pain	36	27.8	22.2	19.4	30.6	50.0
When under fire during the war	7	42.9	14.2	14.2	28.6	42.9
During any kind of excitement	49	38.8	18.4	24.5	18.4	42.9
When suddenly frightened	34	32.4	5.9	23.5	38.2	61.8
When in a prolonged state of fear†	150	72.7	12.0	10.0	5.3	15.3
When angry†	193	25.9	16.1	25.4	32.6	58.0
Speaking with unusual enthusiasm	42	31.0	23.8	38.1	7.1	45.2
When very sure of the soundness of what you are saying and eager to convince the listener†	199	37.2	27.6	24.6	10.6	35.2‡
When exhausted	45	68.9	15.6	13.3	2.2	15.6
When sleepy	48	47.9	22.9	27.1	2.1	29.2
When awaking from sleep feeling refreshed	42	38.1	28.6	26.2	7.1	33.3
When genuinely amused or jocular	47	10.6	38.3	36.2	14.9	51.1
Speaking in a very noisy environment	46	39.1	19.6	34.8	6.5	41.3
Other Conditions						
Speaking to a slight acquaintance of the opposite sex†	198	34.8	24.2	32.8	8.1	40.9‡
Speaking to a slight acquaintance of your own sex†	197	39.1	28.9	25.9	6.1	32.0‡
Making a routine report to someone in authority over you†	189	56.1	24.9	14.3	4.8	19.0
When called on to answer a question in class	50	90.0	4.0	6.0	0.0	6.0
When volunteering to answer a question in class	46	76.1	10.9	10.9	2.2	13.0
When reading aloud in class	48	79.2	10.4	8.3	2.1	10.4
When giving an oral report in class	48	89.6	0.0	8.3	2.1	10.4
When asking a question in class	49	79.6	12.2	6.1	2.0	8.2
When deliberately relaxing during speech	41	39.0	36.6	17.1	7.3	24.4
When feeling calm and relaxed	40	5.0	42.5	35.0	17.5	52.5
In most ordinary conversation	47	57.4	29.8	12.8	0.0	12.8
Speaking about an object, event, or abstract idea which you know and understand very well	46	37.0	45.7	13.0	4.3	17.4
When having adequate preparation for speaking	48	70.8	14.6	12.5	2.1	14.6
When taken off guard by the necessity to say something immediately	48	60.4	12.5	14.6	12.5	27.1
Speaking a foreign language which you learned in your home as a child†	35	42.9	20.0	20.0	17.1	37.1
Speaking a foreign language which you acquired after having learned English†	127	57.5	20.5	12.6	9.4	22.0‡
Speaking without particular interest	38	55.3	31.6	13.2	0.0	13.2
When undergoing treatment for stuttering†	171	29.2	32.2	26.9	11.7	38.6
During rather regularly recurring periods of relative fluency†	204	57.4	13.7	23.0	5.9	28.9‡
During any past period of relative fluency which did not recur†	204	72.5	5.4	14.7	7.4	22.1

*Number of subjects who rated each individual item.

†Percentages for these items are based on the combined data of interviews and questionnaires.

‡Large differences were found between interview and questionnaire data for these items.

3 or 4 is shown as a concise indication of the extent to which a given item was associated with reduced stuttering. The *N* on which the percentages for each item are based represents the number of subjects who were able to rate the item, rather than the total number of subjects. The 23 items which were rated by the questionnaire method as well as by interview are marked with a dagger. The eight items on which large differences were found between interview and questionnaire data are marked with double daggers.

One of the most conspicuous findings from the data in Table 2 is that in very few instances are reductions in stuttering reported by substantially the whole group of subjects. In many cases large proportions of subjects report no reduction in stuttering at all. Some subjects indicate that they stutter more than usual under conditions which others associate with marked fluency.

In part, this variability is probably an artifact of the wording of the items. For example, it is obvious that 'ordinary conversation with your mother' involves very different objective stimulus conditions depending on whether the behavior of the mother tends to be critical, distressed, sympathetic, indifferent, or understanding. To an even greater degree, this variability in subjects' responses seems to be accounted for by differences in the evaluative behavior of the subjects themselves. For example, when speaking to a listener who seems highly interested one subject feels that the listener's attention has been diverted from his stuttering, and reports that he stutters less. Another subject is aware only of a closer scrutiny of his speech, and stutters more. In speaking to a stranger one subject reports reduced motivation to make a favorable impression, and reduced stuttering. Another reports a greater reluctance to stutter, and increased stuttering. When having adequate preparation for speaking one subject feels more secure and has less difficulty, while another has had more time to brood over the possibility of failure and has more difficulty.

These very examples serve to make clear, however, that while subjects varied in their responses to the items there was a basic consistency about the reasons for their responses. To put it another way, while the items themselves do not represent conditions under which stuttering is consistently reduced or absent, these conditions can be inferred from the items, and from subjects' responses concerning them. Up to this point six such inferences have been made. They are represented by the headings under which the items are presented in Table 2. Stuttering appears to diminish under conditions of reduced 'communicative responsibility' (2), reduced need to make a favorable impression, absence of unfavorable listener reactions, changes in speech pattern, associated activity, and intense or unusual stimulation. Table 2 also shows a number of items which are not classified under any of these headings. Practically all of these conditions probably belong under certain higher-order generalizations which have not been considered in this paper.

Summary and Conclusions

Fifty adult stutterers were interviewed on the basis of a list of 115 conditions under which stuttering has been reported in the literature to be reduced or absent. For 23 of the items the interview procedure was supplemented by the use of questionnaires with 154 additional subjects.

The results presented in this article were confined to the rating-scale data alone. The essential findings can be summarized as follows:

1. It is possible to specify over 100 conditions under which fairly large proportions of subjects reported substantial reductions in stuttering.

2. In almost all instances subjects varied markedly in the degree to which they reported their stuttering to be reduced, and very few conditions appeared to result in reduced stuttering for all subjects.

3. Most of the conditions investigated in this study can probably be reduced to six more general conditions under which stuttering appeared to be reduced for substantially all subjects.

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Speech Profiles Of The Pre-school Child 18 To 54 Months

Ruth W. Métraux

GESELL, IN HIS study of the development of the infant and child (*2*), has not always confined his analysis to tabulation of details alone, but has attempted to give a dynamic and integrated picture of the child, a picture which reveals the child as he acts and thinks, as he works and plays, a picture of the child as we see him in his many facets of behavior.

Many detailed and well-documented studies have been made of the speech and speech production of the child but, so far as this writer is able to determine, no one has attempted to give a description of the dynamic speech of the child at each age. What does the speech of an 18-monther sound like as he plays, works, and communicates his needs? How does it differ from the speech of the two-year-old? How does the three-year-old differ from the four-year-old in his speech?

Irwin (*3*) has carried on a concrete and scientific investigation of the speech production of infants at two-month intervals from birth to 30 months. He indicates the number and types of phonemes which should be produced by the average child at each age level. From his study it is known what sounds are used, how many should be expected at each age, and the relative production of the sound in comparison to the total production. This is an excellent developmental gauge, though he does not tell whether these sounds were used correctly in intelligible and communicative speech after intelligible speech appears.

Wellman, Case, Mengert and Bradbury (7) studied the speech sounds of young children and have given tentative norms on the development of each sound at yearly intervals. Following this Williams made an analytical study of language achievements in pre-school children (*8*) and a qualitative analysis of the erroneous speech sound substitutions of pre-school children (*9*).

Proceeding beyond the phonetic development of speech, other investigators such as Fisher (*1*), McCarthy (*4*), and Smith (*6*) have determined how grammar and syntax develop in the speech of the child, while Piaget (*5*) has given some insight into the inter-relation of the development of language and thought.

All of these gauges are valuable in measuring the speech development of a child, and they are needed as accurate and objective points of reference. When the tabulation is finished and the scales are completed, however, it is still the conviction of this observer that there is no real feeling for

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the total speech of the child. It is known that certain sounds are difficult for some children to master, more or less the age limit at which the speech of the child should be specific, the order in which the various parts of speech are acquired and mastered, the number of phonemes he should produce at each age, and the parts of speech he should use, but few persons can listen to the speech of the average normal child and tell at approximately what speech age he is functioning.

It is the object of this study to attempt to synthesize some of the things known about the speech of the child at various ages. Up to now the speech has been taken from the child and measured; now it is proposed to give the speech back to the child and see how he uses it to reveal himself.

Procedure

At the Clinic of Child Development[1] of Yale University, over a two year period, a total of 207 children at seven pre-school ages (18 months, 24, 30, 36, 42, 48, and 54 months) have been studied and observed. All of the children were attendants of the Guidance Nursery, all of average or above average intelligence.

For each child a developmental examination (Gesell) was recorded, and a phonetic transcript (International Phonetic Alphabet) was made of all replies and all speech which the child used during the examination. In addition, extensive records of speech, phonetically recorded, were made during his play and activity periods in the Guidance Nursery. All of the observations are implemented with notes regarding his total activity and behavior in each situation. Interview records and the report of the mother regarding the language and speech of the child in the home were also used.

[1]Now the Child Study Center.

From the phonetic speech transcripts on 116 of these children, detailed analysis was made of their speech production of consonants and vowels, and an analysis of substitutions and omissions. The production of initial, medial and final consonants and vowels was analyzed and the substitutions of consonants and vowels in all positions was tabulated. All of these results thus far have served only to confirm or to enlarge the results already published in regard to the speech production of the pre-school child. Only after the addition of many more cases at each age group might it be possible to be any more definitive than is the available literature. The only statement which can be made in this report is that vowel production in the child's speech appears to be more than 90% correct by 30 months and consonant production seems to be 90% or more correct by 54 months.

Thus, leaving aside for the moment any results which have been already well defined by others, a composite view will be given of the speech of the child at each of the seven pre-school ages already indicated. In the analysis of the data, and in constant observation of the children in the nursery groups, certain characteristics were perceived which could be followed through each age, though at some ages one characteristic was often more outstanding than others. None of the items are presented as 'norms'; they are, rather, illustrative of some of the things which can be expected in the speech of the child at that age. This outline should serve only as a basis for these and other speech characteristics which can be observed as the child progresses toward complete speech specificity. Each child will, of course, have his own individuality in

speech, but it is felt that each age offers speech patterned enough to be described. It is the purpose here merely to indicate some of the elements of that pattern.

18 Months
(28 children studied)

1. *Pronunciation.* The 18-monther leaves off the beginning and the end of a phrase, but with the use of a proper vowel and a medial consonant, as well as the proper inflection, he can make himself understood. Thus, 'See you later' becomes [iulei], 'here I come too' is [ɪɑkʌmku], 'up in the sky' [ʌbikaɪ], and 'orange juice' [ʊdʊ]. On one-word responses, he often gets the initial consonant with a vowel, but seldom the final consonant. A child with minimal speech at this age will often use one syllable or one word for many things and with a changing inflection make himself perfectly clear. [æ] or [ʌ] may be used to indicate 'What is that?' 'Can I have that?' 'No, not that,' and other expressions.

The 18-monther is very uncertain and inconsistent in his production of almost any word. It is the vowel which is the most changeable when he uses the same word in any given period. Thus, for 'ball' he says [bɔ] then [bɑ] and then perhaps [bʊ]; or for 'baby' [bɛbi], [beɪbi], [bɪbi]. One can also hear syllables which are not translatable speech as such, but which change in the same manner: [dɑdududɑdu] or [dɪdɪdoʊ] and [dɪdʌdɪdɪdʌ].

2. *Voice.* His voice is subject to much change and inconsistency, as is most of his speech production at this age. The control seems very unstable. His voice tends to become high pitched and strained. It may vary in a few seconds from a well-modulated voice to a high pitch, then to a yell, a squeak or a sigh. There is a tendency to upward inflection on ends of words and phrases, which often becomes a high whine. He experiments a great deal with voice and pitch, and there is a variety of vocal overflow with little or no phonetic value, such as a laugh, sigh or whisper.

3. *Repetitions.* He repeats syllables or words more frequently than not. When asking for milk, he may say [mʌmʌmʌmʌ]. The repetition is easy, unforced repetition which can be terminated by himself or by the response of others.

4. *Relation of language and activity.* Vocalization is usually combined with activity to emphasize what he is doing, as with 'sit' [sɪ], 'rock' [rɑ], 'up' [ʌp], as he performs the activity, or 'more' [moʊ] as he hands his cup for milk.

He also uses vocalization in protest. 'No,' is vigorous; 'mine' [maɪ] is less frequent.

With the 18-monther, however, it is the action which is important, and the vocalization is often suppressed entirely in favor of the movement. The 18-month nursery group as a rule is a very quiet corner vocally. Some 18-monthers may say nothing at all during a developmental examination, apart from an occasional [hɛ], [æ] or [bɔŋ] for emphasis.

5. *Language relation to others.* The 18-monther refers to an adult, teacher or mother quite often for check. He usually refers to them with activity, by showing something, smiling, or by gesture or looking toward the person. There is sometimes minimal vocalization with the activity, but often it is the gesture or the activity itself which communicates his need.

6. *Tensional outlets in language situations.* In any situation demanding

attention, such as the developmental examination, or in 'reading' a book, there is inclined to be motor overflow, in order of prominence, of the lips, tongue, jaw, eyes, head. It must be noted that in this section, observation of the overflow in the head and face region will take precedence since it is often more related to speech, though other bodily overflow will be noted.

The 18-monther, unless disturbed, smiles constantly during the developmental examination, and there is a good deal of smiling in the nursery. He may regard a situation, using only his eyes and facial expression to indicate the correct response, and there will be no verbalization. He protrudes his tongue, and bites it occasionally. He will nod assent, and release an object with his hands, but the word 'yes' is not yet a part of his vocabulary.

7. *Illustrative excerpts.* a. Common Expressions. 'What's that?' [ʌæ], [hʌdæ], [wʌdæ], [ʌsæ]. 'All gone' [ɔgɔ], [ɔlgɑ], [ɔlgɔn].

b. Developmental Examination. Picture card: 'doggie' [gɑgi], 'shoe' [su], 'house' [haʊs], [hau], 'bow-wow' [bauwaʊ], [boʊwoʊ], 'clock' [tɑ], [tɑk.]

c. Nursery. Boy: (holding out block) 'block' [bɑk]. Drops block and goes to door and tries it. 'The key there' [dɑkidæ]. Goes back to blocks, piles them. 'Dung!' [dʊŋ] as block falls. 'Want to take another' [ɔnʌtɑkʌnoʊkʌ].'This go get around' [tɪgoʊgɛtʌwaʊ]. 'Here I come too' [iɑkʌmkʊ].

2nd boy: 'Duh duh tah' [dʊdʊtɑ]. Voice rises on last syllable. 'High chair' [haɪtʃɛɪ], he points out chair to teacher who enters the room. Another teacher leaves and says 'bye' and he responds 'bye' [baɪ]. Goes to revolving disk of another child. 'Wheel' [ʌi], 'I turn wheel' [aɪtʌʌi]. 'Theh da da' [ðædɑdɑ].

3rd boy: With blocks. 'Me want water' [miwɑwɑwʌ]. 'Vun, two,' he counts. 'Beek bye, go corner, got the buggy, going bang' [bikbaɪ goʊkɔn kʌtʌbʌgi ɔŋ bæŋ]. Goes to table for juice. 'Got juice' [gɑdʒus]. 'Bow wang' [bauwɑŋ]. Teacher brings turtle to table. 'Fishie, fishie. Put back in' [fɪsʌfisi ʌbɑgɛn].

Girl: At table. 'Cookie' [kʌkɛ]. 'I want that chair' [ʌwɑæhɛʌ]. She has brought blocks to table and is explaining something to boy. 'Ung ae uneeaw ae ae' [ʌŋæ nɪ ɔæ æ].

24 Months
(37 children studied)

1. *Pronunciation.* Although phrases are still greatly telescoped, there is usually a beginning consonant whenever indicated, even though it may be a substitution for the correct one, and the final consonant is often present. Medial consonants are slighted. Thus, 'nother one' is [nʌwʌn] and 'I'm all through' [ʌmɔfu].

Beginning difficulty with syntax may also complicate the speech production. He may say 'Those are me's' [oʊzʌmis], and then 'those are mines' [ðoʊzʌmaɪnz], or 'falleds out' [fɔdzaʊt]. [w] substitutions for [r] are strong, and lisping begins to be heard, especially on [s] and [ʃ]. In a short period of observation, the 24-monther will, as at 18 months, often change the pronunciation of any given word, and although the vowel continues to change, there is now some consonantal change. For example, one will hear 'ball' as [bɔbɔbɔbɔ] and in a few seconds [bwɑbwɑbwɑbwɑ], or 'horsie' [hɔsi] then [hɔti], and 'choo-choo' [tutu] will become [tʃutʃu].

2. *Voice.* Some of the 18-month high whining tone still persists, though

in general the pitch is lower and easier. There is some nasality in the tone, especially when the voice is loud. The voice still has an unstable up and down quality. There is some straining, and squealing is still common.

3. *Repetitions.* The 24-monther is now using 'a' [ʌ] before many responses, as on the picture cards or pictorial vocabulary in the developmental examination, and he may repeat [ʌʌ] before he finds the correct response. On comprehension questions he uses 'I' quite often, and this too may be repeated before he frames the answer. There is occasional syllable repetition such as 'wi-wi-wipe my hands' [waɪwaɪwaɪpmaɪ hænz] or 'nuh-nuh ball' [nʌnʌbɔ]. The most common characteristic of repetition at this age is a kind of compulsive repetition of a word or phrase. There is sometimes a variation in the phrase, but it seems necessary to the child to repeat it. With some children the compulsion continues to six or seven repetitions, with others perhaps only twice. Thus a child will say, 'here goes, here goes, here goes' [ʌgoʊ-ʌgoʊzʌgoʊz], or 'a ball, dis a ball, dis a ball, Mom' [ʌbɔdɪsʌbɔdɪsʌbɔmɑm].

4. *Relation of language and activity.* Now the child can sometimes use speech to precede his action. He often announces his intentions before he acts, as 'I'll get it' [ʌdɛtʌt], or 'here goes' [ʌgoʊz]. 'No' is occasionally used in an attempt to control the situation verbally, though action is still the mainstay of control. We still note the enjoyment of action suited to words as he goes 'up' and 'down' or as he 'bangs' the clay.

5. *Language relation to others.* The child now often asks the adult directly to do something for him, or for an answer to a question. With some children, however, an increased awareness of others will serve to make him quite shy and he will not ask directly for help even though he needs it. In relation to his compatriots he often finds screaming or hitting more effective than speech.

6. *Tensional outlets in language situations.* Eyes are the strongest holding factor at this age and there is little motor overflow at this period. His activity is related to the task at hand and there is little extraneous movement.

7. *Illustrative excepts.* a. Common Expressions. 'Mine' [maɪ], [maɪn]; 'another' [nʌ], [ʌnʌ]; 'I want' [aɪ-wʌn], [wʊn].

b. Developmental Examination. Picture card: 'cup' [kʌp]; 'shoes' [tsus], [hu]; 'clock' [tlɑk]. Pictorial vocabulary: 'car' [kɑ]; 'hat' or 'hat on' [hæt], [het], [hætɔn]; 'airplane' [ʌr-pɛn]; 'a moon' [ʌmun]; 'a knife' [ʌnaɪf]. Test objects: 'nickel' [nɪkʌl]; 'keys' [gis]; 'pencil' [pɛntʌl], [pɛn-tsɪ], [pɛʔʌl].

c. Nursery. 1st boy: Playing with car. 'Red car' [redkɑ].

2nd boy: Looking at book. 'Dat's a squirrel.' [dætsʌsʌl].

1st boy: Getting book and joining group. 'Oh, here's some' [oʊhɪsʌm]. 'Set on big bus' [sɛdɔnbɪgbʌs]. Squeals in protest at child coming into group behind him. Now looking at picture of train. 'Go shug-shug' [goʊʃʌgʃʌg].

3rd boy: 'Car.' Repeats this four times. [kʌrkʌrkʌrkaɪʌr].

1st boy: 'All fall down' [ɔfɔdaʊn] as he jumps off table.

4th boy: 'He took that way from me.' [hɪtʌkæweɪfʌmi].

1st girl: 'Read book' [wɪbʊk]. 'More' [moʊ].

1st boy: 'Get wet' [gɛdwɛt]. He is reading book again.

3rd boy: Still playing with car and truck. 'Car, truck' [kartʌ].

1st boy: 'That's mine. Bang, bang, bang' [dæsmaɪn bæŋbæŋbæŋ].

30 Months
(42 children studied)

1. *Pronunciation.* The 30-monther continues to shorten or telescope words and phrases and, as at 24 months, it is usually the medial consonants which are slighted. Except for words or phrases beginning with [ð] or ending with [t], the initial and final consonant are often specific. Thus we hear 'want to' [wɔnʌ]; 'what's that' [wʌsæ], [ʍʌdæt], [ʍʌdæ], [ʍʌsdæ], [ʍʌtdæ], [ʍʌzæt]; 'we didn't' [widn]; 'time to' [taɪmʌ]; 'another one' [nʌmʌn], [nʌdʌrwʌn]. Lisping continues with those children who have difficulty with the [s] and [ʃ] sounds. The [f] and [s] substitution for [θ] is noticeable.

When the 30-monther uses the same word several times within a few minutes, there is usually a change of pronunciation, and both consonants and vowel seem very unstable. Thus, 'house' is first [haʊt] then correctly [haʊs]; 'another' may be first [unʊdʌr] then [ʊndzr]; 'cross' is perhaps [kwɔs] then [kwɑ] and [kɔs].

There is a tendency to over-pronunciation of words, or addition of sound or syllable. For example, we hear 'f l o w e r' [flɔʌwʌr], 'dog' [dɔwʌg], and 'juice' [dʒiuʌs].

2. *Voice.* The voice of the 30-monther has a firm base, but from this he ranges to extremes, sometimes to a high, strained, forced, nasalized tone, to a low, soft, almost cooing quality. The child may be using a low soft voice and suddenly it will rise to a high thin squeak if he needs something immediately. Gross motor activity is often accompanied by squealing and high pitched laughter. Quieter activity at a table, for instance, often ends with speech on a high upward inflection, a squeal or a high pitched laugh. Inflection which has been one of his best speech assets up to now, seems suddenly unstable and not well controlled. He uses a loud, emphatic, strained tone when he wants to restrain or promote action in others. Whining reaches a high point in the home and with the mother.

3. *Repetitions.* The compulsive repetition of a phrase is even more marked now than at 24 months. Most children will repeat a phrase or word occasionally, but some of them will continue interminably with more force, higher pitch and volume each time. At 24 months, the repetition seemed to stem from an inner compulsion. Now it often seems to be the external stimuli which increase repetition since the child is attempting more and more to use speech as a tool to command others to his needs.

This characteristic is varied by some children who do not repeat a word or phrase at any one time, but who use the same phrase periodically within a short period often to the same person to make a personal-social contact, as 'This is my new dress,' or 'These are my shoes.'

The 30-monther also demands repetition from others. 'Do it again,' is a favorite expression, and he enjoys repetition in stories and poems, often demanding the same story day after day. One child's repetitive chant may involve the whole group as they take it up after him.

Some children tend to echo the words of an adult. The degree of this characteristic varies with the child. Developmental stuttering is usually evidenced for the first time at this age. The child who repeats a great deal

will often commence to repeat just the first word or syllable of a phrase such as 'so-so I can go,' or 'Wuh-wuh-why is he doing that?' This often progresses to a tonic block at the end of this easy repetition when the child will say, 'Wuh-wuh-wuh–y is he doing that?' This block is usually broken with easy force by the child himself, and gives him no great difficulty, though it may be quite marked in his speech at this period.

4. *Relation of language and activity.* The child almost always announces his intentions before he acts, even to refinement of description, such as 'gonna make a train–gonna make a big train.' At the same time he uses speech to control a situation to his liking. At 24 months, 'No' was about the extent of his attempt at verbal control, but now he may say, 'No, this time I gon' do it–I'll do it first.' Or, 'Here, don' put it dis way, cause I can't put it in. Leave it dis way.'

He expresses his demands quite verbally as 'Want to play ball,' or 'I wanna make nuh one,' and he also commands much more easily, 'Find the ball,' 'Open the door,' 'Show me.'

5. *Language relation to others.* In the developmental examination, the child is constantly referring something to 'Mom.' He wants her to share almost everything with him: 'Lookut, Mom,' 'How you do dis, Mommie?' Sometimes he is content to look at her, or to smile at her, but he usually verbalizes to include her in the situation. He often includes the examiner in his look or smile, or with a 'show me,' he demands help from her. His commands are usually related to the adult. He seldom commands his contemporaries. As his language is becoming more accurate, he is often greatly disturbed by and protests at any inaccuracies of language in others. Instead of a 'biscuit,' he may insist that one properly call it a 'zwieback.'

6. *Tensional outlets in language situations.* Total bodily movement is the most outstanding characteristic of tensional outlet at this age, or gross movements of the head, shoulders and hands. The 30-monther usually shows a great deal of impatience during a developmental examination. He is up and down constantly, anticipating the next move. It is often difficult to get him into the room and to get him started. Some children cling to their mothers, or sit in her lap at the beginning of the examination. Once he is at the table, it is difficult to keep him there, and the examiner has to keep materials moving rapidly, for the 30-monther is not only impatient, but imperious! 'All through' [ɔfu] and 'go downstairs' [goudaunstɛ] are used constantly in an attempt to terminate the examination. He goes to the door, to the wall, to the window. At the table he may sit on it, lie down on it, put his head down, kneel on the table or crawl over it.

There is frequent lower lip protrusion. Sometimes the jaw is involved and will also protrude or shift to one side or the other. His mouth may be open a good deal of the time, and he may bite his tongue. His tongue protrudes frequently, and he may lick his lips or suck his fingers or thumb. He occasionally hunches his shoulders and he may scratch his nose, his legs, lips, or cheek, or hold his lips with his hand. Eye rubbing is frequent.

7. *Illustrative excerpts.* a. Common Expressions. 'A' [ʌ] and 'some' [sʌm] are usual prefixes to a response. 'I' [aɪ]; 'I did' [aɪdɪd]; 'I don't want to' [aɪdouwɔntu]; 'I don't know' [aɪ-ounou]; 'I can' [aɪkæn], [aɪkʌn]; 'I can't' [aɪkænt]; 'Oh' [ou]; 'Lookut'

[lʊkʌt]; 'Here' [hɪ], [hɪʌ], [hɪr]; 'There' [dɛ], [der]; 'Where' [ʍʌ], [wʌ], [ʍɛʌ]; 'How' [haʊ]; 'All through' [ɔlfu], [ɔfu].

b. Developmental Examination. Picture card: 'Bow-wow' [baʊwaʊ], 'a house' [ʌhaʊs], 'cup' [kʌp], 'a shoe' [ʌʃu], 'clock' [klɑk], 'a flag' [ʌfæg].

c. Nursery. 1st girl: Playing with clay. 'Bang, bang, bang' [bæŋ] each time as she hits clay. Hands clay to teacher. 'Cake, I making a cake' [keɪk aɪmeɪkɪŋʌkeɪk].

2nd girl: Sings as she works. 'Pop goes the weasel' [pɑpgoʊzʌwizʌl].

1st girl: Echoes the song.

2nd girl: 'A for apple' [eɪfɔrʌpl]. 'A for–a for apple' [æfɔæfɔæpʌl]. She sings this four times. 'I'm all through' [aɪmɔfru]. Repeats this three times ending with 'I'm all through everybody' [aɪmɔfruɛvribɑdi]. Continues to sing, 'A for apple' [eɪfɔrɑpʌl]. Note change of pronunciation.

36 Months

(38 children studied)

1. *Pronunciation.* In spontaneous speech, many words and phrases are still curtailed, and the characteristics remain about as at 30 months, with the medial consonant often omitted or substituted, and the beginning and final consonant usually specific, except for words beginning with [ð]. There is, however, at 36 months, a final consonant more often present than appeared at 30 months. The sounds [θ] and [ð] are particularly noticeable at this age for the frequency of substitution for them, their omission or the general difficulty in producing t h e m. Thus, we hear, 'What's this?' [ʍʌsɪs], 'putting them' [pʊtɪŋʌm], 'that's all' [dæsɔl], 'what are those' [ʍʌtʌdoʊz].

With the 36-monther, there seems to be a two-way mechanism operating in his speech production. He may pronounce a word correctly, and then in a few seconds he will pronounce it incorrectly, as 'doing' [duɪŋ], [doʊɪŋ]; 'like' [laɪk], [waɪk]; 'right there' [raɪtder], [waɪtder]; 'that's all' [ðætsɔl], [dæsɔl]. And inversely, he may pronounce it first incorrectly and then correctly: 'ball' [bɔwʌl], [bɔl]; 'think' [sɪŋk], [θɪŋk]. And lastly, he may complete the cycle and pronounce it correctly, then incorrectly, and again correctly: 'that's all' [ðætsɔl], [dæsɔl], [ðætsɔl].

2. *Voice.* The voice of the 36-monther is, in general, of an even, normal loudness, and often in a low, soft tone. His voice seems well controlled, and though he can become commanding and emphatic, *he* seems to be in command and not the voice. When he uses a softer tone, some nasality seems to creep into the voice, while a louder, more forceful level seems to eliminate it. He has a very expressive rising inflection of surprise and pleasure. There is often a breathlessness to his pleasure and he is easily surprised. He is beginning to whisper, and often responds to whispering when other techniques fail.

3. *Repetitions.* Most children are again on an easy repetitive basis with none of the compulsion noted earlier. When, during an examination, the child does not know the answer, he will ask the question antiphonally with the examiner until she changes the question. He will repeat or echo phrases between performances, but this is not excessive. One hears, however, occasional repetition of the beginning syllable, an [ʌ] or [ʌm] is often used as a starter for speech. There are some instances of medial repetition as 'the kitty rides in-in-in that,' but tonic block on a beginning

syllable as 'I wuh———want the doll,' is quite infrequent.

4. *Relation of language and activity*. This is the high point, together with 42 months, of verbal demand for verification before proceeding with action. The child says, 'Where does it go?' 'How do you do it?' 'What do we do now?' The action is then coordinated with a verbal expression: 'There,' or 'like that.' There is a great deal of verbal demand, 'I want,' and much more verbal control of a situation.

About half the children announce their intentions before they act. With a few children activity may preclude verbal expression, but some children can talk or describe what they are doing as the activity proceeds. In the Detroit B items on the developmental examination, 'What blows?' 'What scratches?' 'What bites?' a verbal explanation will be given, usually followed by an active demonstration.

5. *Language relation to others.* Commands such as 'You build it,' 'Hey gimme,' 'You make it,' and 'Look what I made,' are the most outstanding characteristic of the 36-monther's relation to others. It is still the adult who receives most of these commands, though he can command his contemporaries when the occasion calls for it. During the developmental examination, he confirms his action or expression with the examiner by 'Don't they?' 'Isn't it?' 'Would it?' or 'Can I?' An initial concept of 'permission' from others is beginning to appear. He questions, 'How?' 'What?' 'Now what?' He invites: 'Will you do this?' During examination, he relays questions to his mother only occasionally.

6. *Tensional outlets in language situations.* At this age tongue protrusion and licking the lips seems to be the most prominent release of tension. The 36-monther seems happier than he has been since 18 months, with his constant smiling and laughing during the examination and in the nursery, as well as in the home.

Eyes, too, afford a great release at 36 months. The child will look away from a situation which is too difficult by regarding the table, by looking upward to the ceiling, or by rolling or blinking his eyes in a short meditative interlude. Lip protrusion is frequent. Hands ands arms are in movement scratching, rubbing eyes, wiping the mouth, pulling at his clothes.

7. *Illustrative excerpts.* a. Common Expressions. 'I wanna' [aɪwɑnʌ], 'funny' [fʌnɪ], 'I'm busy' [aɪmbɪsi], 'I'm all through' [aɪmɔlfwu], 'I won't tell you' [aɪwountɛlju], 'I don't want to' [aɪdouwɑnʌ], 'I can't' [aɪkænt].

b. Developmental Examination. Pictorial vocabulary: 'A auto' [ʌɔtou], 'a hat' [ʌhæt], 'a telephone' [ʌtɛfoun], 'dat's a knife' [dætsʌnaɪf], 'dat's another hat' [dætsʌnʌrhæt], 'dat's a block' [dætsʌblɑk]. Detroit B: 'Children cries' [tʃɪldrʌnkraɪz], 'some children do' [sʌmtʃɪldrʌndu], 'some ice cream' [sʌmaɪskrim], 'the water floats' [dʌwɑtʌrflouts], 'the doggie growls' [dʌdɔgigraulz].

c. Nursery. Mike: 'Is this a gun that shoots?' [ɪzðɪsʌgun ætʃuts] 'Does it go bang-bang?' [dʌzʌtgoubæŋbæŋ]. He goes to puzzles. 'I see where that goes.' [aɪsiмʌrðætgouz] Only his eyes pick out the proper piece. He continues to try and help Richie with his p u z z l e. 'Right dere, right dere' [raɪtdɛr], as he places the pieces. Richie and Mike both go to the rocker and clash. Richie tries to make Mike retreat by clapping his hands, 'No, Richie' [nourɪtʃi]. The boys continue to hit each other, and Mike is finally victorious. He r o c k s vigorously. Teacher says he must be careful.

'What?' [ʍʌt] he asks three times as she repeats the admonition.

Richie: Goes back to p u z z l e. 'Where's that go?' [ʍʌnætgoʊ]

Mike: Follows up Richie. Takes a toy iron. 'This mine' [dɪmaɪn]. He sings to himself. He irons. 'He went away' [hɪwɛnʌweɪ], as he points the iron at Richie. Music box is brought in. 'What's the record gonna be?' [ʍʌdʌrɛkʌrdgoʊnʌbi]

Richie: Runs to victrola. 'I wanna stand on a chair' [aɪwɑnʌstændɔnʌtʃeɪr].

42 Months
(20 children studied)

1. *Pronunciation.* Difficulty with [ð] which is still often substituted or omitted, and omission of the medial consonant of a word or phrase are the most outstanding characteristics of pronunciation at this age. For instance, 'I don't know' may be [aɪoʊntnoʊ] or [aɪdoʊnoʊ], and 'What's that?' is usually [ʍʌsæt].

There is occasional exaggeration of a word as there was at 30 months.

The pronunciation of any one word changes little in a given period except for words involving [ð].

2. *Voice.* In a group, and often in conversation with just one person, a high, full-volumed yell seems to be the normal speaking tone. The children become excited easily at this age, and it seems to be the voice which takes the lead. There is a great deal of raucous, strained quality, and the voice often breaks in an attempt to go higher and louder. Squealing and yelling are common and the 42-month group is perhaps the noisiest in the nursery. On the other hand, whispering is still a strong characteristic, and the child may whisper a request or statement, but if he is not given immediate response, he will yell. Thus, it is again a period of extremes of voice, but the louder extreme has the margin at 42 months.

3. *Repetitions.* Repetitions are frequent and occur with almost every child. This characteristic again has a somewhat compulsive quality as it did at 30 months, but with a slightly different emphasis. At 30 months, one can often break the repetition by introducing a new subject or object. But at 42 months, the repetition often seems to be related to another person, in demand for attention, information or encouragement. If one answers him or repeats the same phrase back to him, the repetition is usually broken and the child continues his activity, though he may have to complete the cycle and repeat just once more what he has been saying.

Developmental stuttering is again prominent and is often characterized by a tonic block on the initial syllable, the duration of which is usually longer than at 30 months. 'W——w—— why did, why—— why did you do, why did you do that?' The breathing is sometimes noticeably disturbed. It seems, however, to give the child himself no more difficulty than before. This is also the age where grimacing, cocking the head, puffing out the cheeks and similar tensional overflow appear when speech blocking occurs. In other words, more individual variations begin to appear with children whose tensional overflow affects the speech. General rate of speech seems to be faster at this period. One child's reaction to this may be to leave his sentences hanging in the air and start another without difficulty, while another child may perhaps react by blocking. The rate, at this period, may be influenced by the effort of trying to keep up with the group.

4. *Relation of language and activity.* The characteristic of verifying verbally before proceeding with action is prominent with all 42-monthers. As at 36 months, he asks 'What?' 'Where?' 'How?' beforehand, following with the activity and coordinating the activity with a verbal expression, 'This is it,' 'There,' or 'That's the way.'

He often makes running comment on what he is doing, and now after the activity is terminated, he often gives a verbal description of what he has done. We see that this is a great deal like the 36-month pattern, but there is greater refinement of description to his comment. Instead of saying, 'I did it,' or 'I made it,' he now says, 'I made a lady. This is the foot. See the l'il shoes I made.'

He still announces his intentions, and he now excuses himself from a situation by saying, 'I don't know how to write' or 'I think this is too hard,' while earlier he said, 'No, I won't,' or 'I don't want to.' He often makes judgments of his work in his running comment, 'I'm not a very good drawer,' 'I went out, didn't I?' or 'Dis is no good.'

5. *Language relation to others.* 'I want . . .' still seems the most frequent expression of the 42-monther in his relations with others. He is quite dependent upon the attention, approbation and encouragement of others, both adults and contemporaries, and he calls attention to what he is doing with 'See what I'm making.'

He needs a good deal of information and confirmation from others: 'Does this go here?' 'Does that go like this?' He continues to command the adult, 'Now you do it,' but he also commands his contemporaries with ease, 'Go away,' 'You can't,' though perhaps with little social grace! He is quite conscious of adult commands and he wants to comply, even though he often resists them. He now asks permission of both adults and contemporaries, 'Can I?' and 'Will you?'

6. *Tensional outlets in language situations.* Tongue protrusion is still prominent in release of tensional overflow. He also bites and clicks his tongue when tension is evident. His hands are prominently in movement. It should be noted here that at this age there is often a rapid and frequent shift from left to right hand activity. Voice variations are notable and characterized by whispering, sighing, squealing, laughing, chuckling, yelling, spluttering, singing, and mumbling.

7. *Illustrative excerpts.* a. Common expressions. 'What' [ʍʌt]; 'where' [ʍʌr], [ʍɛr]; 'how' [haʊ]; 'see' [si]; 'little' [lɪl]; 'funny' [fʌnɪ]; 'I want to' [aɪwɑnʌ], [aɪwɔnʌ]; 'I will not' [ɑɪwɪlnɑt].

b. Developmental examination. Pictorial vocabulary: 'Truck' [trʌk]; 'hat' [hæt]; 'ball' [bɔ], [bɔl]; telephone' [tɛdʌfoʊn]; 'airplane' [ɛrpeɪn]; 'knife' [naɪf]; 'block' [bɑk]; 'horse' [hɔrθ]; 'piggie' [pɪgi]; 'coat' [koʊt]; 'boat' [boʊt]; 'arm' [ɑrm].

c. Nursery. Boy: riding bicycle. 'Git out de way' [gɪtaʊtdʌweɪ]. Sees juice on table. 'Have we got punkin juice today?' [hævwigɔtpʌnkɪndʒustudeɪ]. Starts speech play with a girl and they throw 'witchuh' [wɪtʃʌ] back and forth several times.

2nd boy: 'I jumped right on my pants,' he says after he jumps off blocks and catches foot in his trousers. He gets on bike, 'Have to go to New York' [hævtugoʊtuniujɔ]. Sees napkins on table, 'Orange napkins' [ɑndʒnæpkɪnz]. To girl, he says, 'Let me have this rattle. You know Nancy, we

have pineapple juice every day.' (completely specific).

Girl: 'I want more juice' (specific).

Boy: 'I want more juice too' [aɪwɔntmourdʒusdu].

2nd boy: 'We aren't gonna rest, are we?' [wiɑrntgɑnʌrestɑrwi]

Girl: 'I want a cracker' (specific).

2nd girl: 'Bill, is this your chair?' (specific)

Boy: 'Here, Danny, Betty Jo's in the kitchen painting' (all specific except [kɪtsʌn]).

Girl: Goes over to prohibit playmate from bothering her construction. 'No, we're making a bridge' (specific). 'Take those over here' [tɛkdouzouvʌhɪr]. 'Did you hear what Miss Lockwood told you to do?' [dɪdjʌhɪrmʌmɪslɑkwudtouljʌtʌdu]

48 Months

(26 children studied)

1. *Pronunciation.* The child continues to omit medial sounds, with emphasis on omission of [t], [d] and [ð]. Thus, we hear, 'and that's all' [ʌnætsɔl], 'I don't want to' [aɪdouwɑnʌ], 'I don't know' [aɪounɔntno], 'That's all' [ðæsɔl]. Any change in pronunciation in a given period occurs usually only with words containing the [ð] or [θ] sound. As with 'through,' we may hear [fru] then [θru]; or 'that's' may be [ðæts] and in a few seconds [dæs]. A child who has mastered or pronounced such sounds as [l] and [r] correctly, however, may now have a temporary relapse and use a [w] substitution. The children who have not mastered these sounds at all as yet vary in the substitutions used for them.

2. *Voice.* The four-year-old voice is beginning to subdue a bit from that of the 42-monther. However, the loud, often raucous voice quality continues with some children, especially with the boys. The 48-monther is still easily excited, especially with activity involving gross bodily movement, and the voice reflects it immediately. There is some whining, and he whispers to himself. Inflection is often quite dramatic and he enjoys the drama. If he speaks of a tiny animal his voice is squeaky; if it is a steam engine, his voice is deep and husky.

3. *Repetitions.* There is little repetition at this age in comparison to some of the preceding ages. The child will repeat a phrase occasionally, but the repetition has none of the compulsive quality of the earlier ages. The child whose speech has been characterized by periods of developmental stuttering up to this time, however, may continue to have phases when repetition and blocking occur.

4. *Relation of language and activity.* The child still announces his intentions, and he usually describes what he is doing, or talks with ease while he is performing. He passes judgment more frequently on what he is doing or has done.

Speech seems to take on somewhat the same quality as a gross motor activity, for the children will throw words and phrases back and forth to one another as they throw a ball. Nonsense words are enjoyable, and there is often rhyming of nonsense words in speech play.

There is a great deal of dramatic play at this age, and when verbal and action are combined, both are often big, such as 'I threw it away, I swept it away,' while the child makes big wide gestures which conform to the feeling of the words.

There is now anticipation of future activity with verbalization. 'We'll have to wipe the table up, won't we?' Or, 'If you come to our house, I'll show you.'

He seldom asks, 'Where does that go' before placing an object. This demand for verification before acting has practically disappeared by 48 months.

5. *Language relation to others.* Demand and command are still the outstanding characteristics of speech in relation to others, and both children and adults are included. 'I wanna,' 'I don't wanna,' 'Come on,' 'Put it there,' 'Sit down,' 'Go away,' 'Scram.' In demanding attention from others, he is less imperious than he was earlier. Now he may say, 'wanna see me do a funny thing?' while before he said, 'Lookut,' or 'Watch me!' He asks permission with 'Can I' or 'Can you,' and he excuses himself from a task with, 'I can't do it because I have to walk on two feet,' or 'I'm so tired, I are so worn out, I'm so worn out.'

He questions the actions of others, 'Why do you do that?' As indicated above, he enjoys speech play with others, and nonsense words are characteristic. Dramatic play is also pleasurable. One child may chant, 'I'm a witch,' and the group will respond, 'You're a witch, you're a witch,' as they all march in time to the chant.

Contact with the four-year-old sometimes seems to be lost entirely. Whether it is due to disturbed attention factors, disturbed hearing, or a combination of these or other factors, it is difficult to judge. It often seems, however, to be a real hearing difficulty. For example, one will speak to the four-year-old repeatedly without any response even though he seems to be giving attention. And inversely, he will speak to someone else repeatedly, but never hear their reply even though the volume of the response may be increased each time and he appears to be listening.

6. *Tensional outlets in language situations.* Tensional overflow seems to be at a minimum during speech situations at four years. Only about half the children showed any tensional overflow such as tongue protrusion, finger in mouth, holding lower lip with teeth, lips pursed, jaw thrust forward.

7. *Illustrative excerpts.* a. Common Expressions. 'I don't know' [aɪdoʊnoʊ], [aɪoʊntnoʊ]; 'I want to' [aɪwɑnʌ]; 'I can't' (specific); 'Can I?' (specific); 'Somebody' (specific); 'Anything' (specific)[2]. It is interesting to note here the progression of expressions which the child uses in relation to self: At 24 months, he usually says 'I' or 'me'; at 36 months, he says 'you'; by 42 months, he can use 'we' and 'you'; while at 48 months, he says 'somebody' or 'anybody.'

b. Developmental Examination. Pictorial vocabulary: 'a car,' 'a hat,' 'a red cross,' 'a key,' 'an airplane,' 'a moon,' 'knife,' 'lady,' 'a coat,' 'a boat,' 'a stick,' (all specific); 'that's a flag' [ætsʌfæg], 'that's a horse' [ætsʌhɔrts].

c. Nursery. Girl: At table, 'I don't have to reach either. We'll have to wipe the table up, won't we?' (all specific). She stands to wipe off the table, and as she brushes off the crumbs, she says, 'I threw it away, I swept it away,' with large gestures (specific).

2nd girl: 'Everybody's all through except you' (specific).

3rd girl: 'Except me' (specific).

2nd girl: 'Except you' (specific). The two girls toss this back and forth several times. Now both girls go to play corner. One takes the doll carriage. 'Nancy's the daddy, I'm the mammie. I have to push it' (specific).

Boy: To second boy, 'Sit down and

[2]See Gesell and Ilg (2) for additional expressions.

look at the book, Freddy. Look at the fire engine, honey' [sɪtdaʊnʌnlʊkæt-ðʌbʊkfredi wʊkætfaɪrend͡ʒʌnhʌni].

3rd boy: 'Put the book up here, honey. We're going outside.' (specific except for a faint reminiscence of [θ] on the medial [s] sound).

2nd boy: Joins girls in play. 'Barbara, hi' (specific). He finds out that Barbara is the mama, and enters immediately into the spirit of the play, 'Hiyah, Mammie.'

54 Months
(16 children studied)

1. *Pronunciation.* The child still has minimal difficulties in word and phrase production, but the words or phrases are not shortened or telescoped in any one place with regularity. The [ð] and [θ] still give difficulty. He may shorten words, but it seems deliberate now, and not a necessity as in 'cept' for 'except,' 'les' for 'let's,' 'rase' for 'erase.' Occasionally one hears reversals within a word such as 'bakset' for 'basket,' though it is not an outstanding characteristic.

The pronunciation of any word within a given period seldom changes except occasionally with words containing a [ð] sound or one with a medial [t].

2. *Voice.* Voice seems firm, rounded, well modulated. The child often uses a musing, contemplative tone, thinking or meditating a good deal as he talks, which gives his voice a somewhat detached quality. He often whispers to himself, carrying on quite a conversation involving two or three people and often taking all the parts himself. Highly social girls often seem to have the same inflectional tone as their mother, or as the female voice with which they come in contact most frequently.

3. *Repetitions.* He often uses [ʌm] or [ʌ] in a musing fashion at the beginning of a phrase, but he repeats seldom except for emphasis. The child who has shown speech blocking earlier may again have occasional difficulty, though it has probably come and gone in a cyclic fashion since he began to show tensional outlet in his speech. If he blocks now, it is probably characterized by a slower rate, with a long breath before he starts to speak. It is perhaps the child's way of controlling or reducing the tension.

4. *Relation of language and activity.* The 48-monther had reached a stage where speech and language was a frequently employed and highly pleasurable tool. By 54 months, however, he is apparently satisfied with much less verbalization. He often goes to a task and says little. The interplay of action and verbalization is easy for him, however, and he often talks casually while performing. He may describe his activity after he has finished though it does not seem necessary to him. He seldom announces intentions, though at times when he makes an error, he may say, 'Have to 'rase it off. I made the wrong one. I'll draw it over.'

5. *Language relation to others.* The child does little commanding or demanding now unless it is to ask for information. Speech is now a more facile tool. He often judges other people and their actions. He gives a good deal of spontaneous information about what 'I can do,' and with slight stimulation will tell a long story about himself or his environment. This story may become complete improvisation and the other person may be forgotten while the story goes on indefinitely. Some children are able to cover up any inadequacy with humor or verbal banter. The child is boastful

and he likes to surprise the other person, 'You'll be surprised when you see what I'm doing,' or 'Guess what I have,' or 'You think what I have.'

Vocabulary is increasing so fast now that precision of pronunciation in others is important, for he picks up every new word, repeating it immediately and asking what it means. He often asks for several repetitions before he gets it just right.

6. *Tensional outlets in language situations.* Tongue protrusion is still a prominent tensional overflow pattern, and laughing or giggling is notable. Most of the overflow is exhibited, however, in larger activity such as standing, arm activity, wiggling in chair, moving feet.

7. *Illustrative excerpts.* a. Common Expressions. 'I don't know,' 'I said,' 'tiny,' 'surprised,' 'funny' (all specific); 'because' (specific unless it is shortened to [kɔz], 'little' ([lɪdʌl] unless it is specific).

b. Developmental Examination. 'A automobile,' 'a boy's hat,' 'a telephone,' 'key,' 'a airplane,' 'a ball,' 'knife,' 'that's a flag, red and white stripes and blue stars.' (All specific except for omission of final [d] in last phrase on 'and.')

c. Nursery. The 54-monthers were never numerous enough at any one time in the nursery to have an entire group of approximately this same age. Hence nursery conversation is omitted here.

Summary Profiles

18 Months. Somewhat quiet vocally in the nursery school unless quite disturbed. More verbalization at home with mother or at play. Long periods when activity is more important than speech. Vocalization usually combined with activity. Negative protest frequent. Good deal of jargon. Leaves off beginning and end of phrases, but makes himself understood by proper vowel and medial consonant, along with inflection. Uncertain and inconsistent in production of words; usually the vowel changes. Voice is also changeable. Experiments with voice and pitch, and has a variety of vocal overflow. Repeats syllables easily. Refers to adult for check, usually by activity. Overflow of lips, tongue, jaw, eyes and head in situation demanding attention. Smiles a great deal of the time unless disturbed. Common expressions: 'what's that?' [ʌæ], [hʌdæ], [wʌdæ]; and 'all gone' [ɔgɔ], [ɔlgɑ], [ɔlgɔn].

24 Months. Outstanding characteristic is strong repetitive, almost compulsive quality. Indications of initial syllable repetition. Seems to be consolidating past six months progress and repeats words and phrases as though fascinated. Occasionally announces his intentions before acting. Sometimes uses 'No' in attempt to control a situation, but action still quite dominant. Vowels may be inconsistent as at 18 months, but also sometimes consonants. Usually he uses beginning consonant in words and phrases, though it may be a substitution; final consonant is often present, but medial consonants slighted. In general, tone is lower and easier than at 18 months. Some nasality. Squealing and screaming still prominent. Now can ask an adult directly. Commands others occasionally. Does not need the adult for constant check. Eyes are a strong holding factor, and in situations demanding attention there is little motor overflow. Most common expressions: 'mine,' 'I want,' and 'another.'

30 Months. Speech now more a social tool, though the child is the axis. Impatience characterizes his

speech and his activity. Compulsive repetition is more marked than at 24 months; he also demands repetition in verbalization and activity from others. Developmental stuttering usually evidenced here for the first time. Tensional outlets are quite outstanding and gross motor overflow is the most prominent. Tries to terminate the situation verbally. Almost always announces his intentions before he acts, even to refinement of description. Expresses demands quite verbally and commands the adult much more easily, although he seldom commands his contemporaries. L i k e s to include 'Mom' if she is near; usually does so by verbalization. Continues to shorten words and phrases, usually by slighting medial consonants. Beginnings and endings, except for beginning [ð] and ending [t], are often quite specific. Both the vowel and consonant seem unstable in pronunciation. Some overpronunciation by addition of sound or syllable. Voice has a firm base, but varies from this to extremes. Inflection often s e e m s unstable and poorly controlled. C o m m o n expressions: 'Lookut,' 'what's that,' 'I don't want to,' 'I did,' 'I can,' 'I can't,' 'here,' 'there,' 'where,' 'how.'

36 Months. Relation of language and activity, and language relation to others is spreading in many directions. This age and 42 months are high points of verbal demand for verification before proceeding with action, which is then coordinated with a verbal expression. Commands the adult a great deal, but an initial concept of permission from others is beginning to appear. Sometimes predicts the next step in development by saying, 'Will you do this?' Shortens words and phrases as much as at 30 months, omitting or substituting medial consonant, with the initial and final consonant specific, except for [ð]. A final consonant appears more often than at 30 months. Voice is generally of an even, normal volume and often in a low, soft tone. Voice seems controlled even when commanding and emphatic. Has a very expressive rising inflection of surprise and pleasure. Whispers and often responds to whisper when other techniques fail. Shows an occasional easy repetition, although some children still show a pronounced blocking. Seems happier than any time since 18 months. Tongue and eyes offer the most release when tensional overflow is evident. Most outstanding expression: 'I wanna.'

42 Months. A high, full-volumed yell seems to be the normal speaking tone. Easily excited, and the voice seems to lead. Much raucous, strained quality, and the voice often breaks when squealing and yelling. Whispering, however, is still common. A period of extremes, with the louder the most frequent. Repetitions are frequent and of a somewhat compulsive quality, but seem related to demands for attention, information or encouragement. Developmental stuttering is again prominent. Usually verifies verbally before proceeding with action, coordinating the movement with a verbal description, and concluding with refined oral commentary of what he has done. Often comments on his own work. Quite dependent upon the attention, approbation and encouragement of others; commands with ease, but also asks permission. Most prominent characteristic: 'I want.'

48 Months. Has attained a maturity in speech which gives him freedom and pleasure. Voice is more subdued, although loud and raucous when excited. Minimal tensional overflow in speech situations. Still omits medial

sounds, usually [t], [d] and [ð]. Still announces intentions and talks easily while performing. Demand and command characterize his speech. Asks permission, gives excuses, questions others' actions. Sometimes appears to have a hearing difficulty. Occasional relapse in pronunciation, especially of [l] and [r]. Common expressions: 'I wanna,' 'I don't know,' 'I can't,' 'Can I?'

54 Months. Speech has become a facile tool, but verbalization does not always seems necessary to him. Does little commanding or demanding unless to ask for information. Often judges other people and their actions. Gives a good deal of spontaneous information about what 'I can do.' May be able to cover up an inadequacy with humor or verbal banter. Boastful and likes to surprise others. Sometimes shortens words to communicate needs more rapidly. Voice seems firm, rounded, well-modulated; often uses a musing, contemplative expression. May say [ʌm] or [ʌ] at the beginning of a phrase, but seldom repeats except for emphasis. If he has shown blocking earlier, it may again appear, although he seems to have no consciousness of difficulty.

Summary

Two hundred seven children were studied in regard to the dynamics of speech production. Seven pre-school age levels from 18 to 54 months were included. No item has been included in the data presented unless the frequency warranted it. 'Voice' is necessarily based on a less objective analysis. Such a factor should be studied more carefully, and phonograph or oscillograph recordings used to make the analysis more accurate. These characteristics are not 'norms,' but only an indication of some of the things in which progress can be noted and described in the speech of the child as it proceeds toward complete specificity.

No general conclusions or theoretical propositions are drawn as a result of this study. It would be of interest to investigate further such characteristics as developmental stuttering and auditory development.

It would appear that the speech therapist should be able to recognize the stage of development of the speech of any child. Better understanding of normal speech of the child will provide a clearer understanding of atypical speech.

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The Relationship Of Diadochokinesis To Various Speech Sounds

Dale J. Lundeen

SPEECH CAN BE considered as consisting of four interrelated aspects: auditory, linguistic, phonatory, and articulatory (*12*). Each is an inseparable portion of the speech process, although for practical purposes we may consider them individually. Likewise, the articulation aspect may be regarded as composed of four factors. They are: ability to hear and discriminate among high frequency sounds; auditory memory span; specialization of muscle movement; and speed of muscle movement. This study is concerned with the last of these, speed of muscle movement.

The maximum speed of movement with which a given reciprocating act (such as tapping the finger or protruding the tongue) can be produced is called diadochokinesis. Persons differ in diadochokinetic ability. Even in a given person this ability will not remain static. Physical condition and psychological factors may be influential, according to Johnson (*4*) and Ream (7).

Age also changes the maximum rate at which a reciprocating muscular act may be produced. Diadochokinesis of the seven-year-old male is about two-thirds that of the 20-year-old male. At this latter age the person seems to have been diadochokinetically mature for approximately two years (*2*). The works of Pettit (*5*), Schlanger (*8*), and Jenkins (*2*) indicate that as chronological age increases, diadochokinetic ability increases until about the age of 18.

The purpose of this study was to investigate various aspects of diadochokinesis in normal speaking adults. Whether or not diadochokinesis changes from one consonant to another was the first question considered. The literature failed to reveal any study that bore directly on this problem. The opinion of certain speech pathologists whom the author consulted, however, was that consonants having different focal articulation points would have varying diadochokinetic rates.

The second question considered concerned the diadochokinetic effect when focal articulation points are kept constant and the element of voice varied. In other words, could an unvoiced consonant such as [s] be made faster than its voiced cognate [z]? Possibly the addition of the voicing act would reduce diadochokinesis on the grounds that added movements complicate and slow down a given task. The reverse could also be true. Perhaps the voicing act might perform in a manner similar to a cat-

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alyst in a chemical reaction, thus being a facilitating agent. Another possibility would be that any diadochokinetic modification due to the element of voice might be so slight as to be immeasurable in the present experiment.

The third question this study wished to consider was whether or not sex differences existed in diadochokinesis. Previous experiments have given contradictory results.

Procedure

The 10 consonant sounds chosen for investigation were: [p], [b], [t], [d], [k], [g], [f], [v], [s], and [z]. These were picked because (1) they represent five pairs of voiced and voiceless combinations, (2) they represent, according to Poole (*6*), four periods in the normal sequence of sound development, and (3) they represent five different focal articulation points used in various sound formations—that is, bi-labials [p] and [b], lingua-alveolars [t] and [d], lingua-velars [k] and [g], labio-dentals [f] and [v], and lingua-alveolars with a narrow air blade [s] and [z].

These consonants were combined with the schwa vowel [ə] as in *sofa*, thus forming a syllable. Use of a syllable was necessary because [b], [d], and [g] cannot be produced in isolation. Another reason was that the unvoiced consonants by themselves are relatively difficult to hear. The schwa vowel was chosen because of the tendency in the United States to neutralize a vowel in an unaccented position, especially when speech is rapid. As this vowel was common to all syllables, for all practical purposes the consonants can be compared directly with one another.

The diadochokinesis of each of the 10 consonants was tested using 40 subjects. All subjects were over 18 years of age. Twenty subjects were males and 20 were females. The mean male age was 27.85 and the mean female age was 23.55. All were volunteers, either students or faculty members at Indiana University. Before a volunteer was accepted as a subject his speech was examined carefully by the experimenter. This insured that no persons with defective articulation would be used in the experiment.

To measure the diadochokinesis of the 40 subjects quantitatively, individual recordings were made upon acetate discs. Before any recording was made, the purpose and procedure was explained to each subject. The need for trying to make the syllable repetitions as rapidly as possible was emphasized. To illustrate the importance of speed and to clarify the procedure, the experimenter repeated a given syllable at his maximum rate. Following this, the subject was given a card listing the 10 syllables. Each of the 10 syllables was then practiced for a three-second period in the order given on the card. When this was accomplished, the syllable appearing initially was practiced for another three-second period and then a seven-second period of this syllable repetition was recorded. The subject did not take a breath during this seven-second period. This procedure was repeated for the nine remaining syllables. Thus, each syllable was practiced for six seconds (two three-second periods) before the actual recording was made.

To compensate for any effect which the order of syllable presentation might produce, a method similar to the Latin square technique was used. Each of the 10 syllables was presented an equal number of times in each of the 10 possible positions. In

other words, the order was changed one syllable for each subject. For example, the order for the first subject was [pə], [bə], [tə], [də], [kə], [gə], [fə], [və], [sə] and [zə]; for the second subject it was [bə], [tə], [də], [kə], [gə], [fə], [və], [sə], [zə] and [pə], etc.

Each practice and recorded period was measured by an electric metronome set at one beat per second. The experimenter started and stopped the subject upon the desired second by listening to and counting its rhythmical beat. The metronome was placed near the microphone so that its beat was recorded as the subject repeated the syllables. This divided the recorded repetition of a given syllable into seven one-second parts.

Each subject's recorded performance was later analyzed. The number of syllables a subject made per second was counted as the recording was replayed at a slower speed. In the counting of the syllable repetitions, only the middle five seconds were considered. The initial second was eliminated since many subjects did not start exactly on the beat of the metronome. The final second was not counted because some subjects began to run out of breath.

To test the effect of the order in which the syllables were presented to the subject and the constancy with which these syllables would maintain their ordinal diadochokinetic ranking after an interval of time, two subjects were retested within a four-week period. On the retrial, however, the original order for presenting the syllables to the two subjects was reversed. The diadochokinetic rank order of the syllables on the original records were then compared with those on the retrial by means of Spearman's Rank Order Correlation Method. This comparison resulted in Spearman rho coefficients of .80 and .86.

Results

Table 1 presents data derived from tabulating the number of syllable repetitions produced in each five-second period by the 40 subjects. The syllables appear to fall into three groups. The first group would be composed of [də], [tə], [bə], and [pə], lingua-alveolars and bi-labials. The labio-dentals, [fə] and [və] would compose the next group. The last and slowest group would be made up of [sə], [gə], [zə], and [kə], lingua-alveolars and lingua-velars.

The significance of the differences among the means of the syllables was determined by applying the *t* test. No significant differences were found between the voiced and voiceless cognates that could not have occurred by chance alone. Neither were there significant differences within the groups mentioned previously, that is, group [də], [tə], [bə], and [pə] and group [sə], [gə], [zə], and [kə]. The difference between each member of the

Table 1. Diadochokinetic order and variability of 10 syllables.

	Syllable	*Mean No. of Syllables per Five Seconds*	*Standard Deviation (five-second interval)*	*Mean No. of Syllables per One Second*
1.	də	35.8	4.9	7.2
2.	tə	35.4	5.6	7.1
3.	bə	35.2	4.1	7.0
4.	pə	35.0	4.5	7.0
5.	və	33.4	3.6	6.7
6.	fə	33.0	3.9	6.6
7.	sə	31.4	3.1	6.3
8.	gə	31.3	3.9	6.3
9.	zə	31.3	3.7	6.3
10.	kə	31.2	3.8	6.2

former group and any member of the latter group, however, was statistically significant at or above the .05 level of confidence. The syllables [fə] and [və], which held an intermediate position in reference to the other two groups, were each significantly different from the other syllables or barely missed significance at the .05 level.

Significant diadochokinetic sex differences were also found. The average of the means of the 10 syllables, when arranged according to sex, was 34.9 for the male group and 31.7 for the female group. Thus the males were on the average faster by 3.2 syllables in an interval of five seconds. When the means were pooled on the basis of sex and the data analyzed statistically to determine the probability of a real sex difference existing, a *t* score of 3.64 resulted. This would be considered significant at the .05 level of confidence.

Though the males proved to have faster diadochokinesis, there was no overt sex difference in variability. Both male and female groups had mean standard deviations of 3.7.

Discussion

As was reported previously, high correlations were obtained when comparison was made between the original records of two subjects and records made later with the order of syllables reversed. This would seem to indicate: that the order of presenting the syllables had relatively little effect; that any fatigue factor was negligible in comparison to the differences among syllables; and that the differences between syllables produced by a given person tend to remain relatively constant, at least over a four-week period.

These high correlations tend to validate the study in certain respects. A more adequate check would be to make comparisons with studies that are reasonably similar. Van Riper (*11*) found that a group of college students could make the syllable [tə] at the rate of seven per second. This finding is almost identical with 7.1, the mean for [tə] in this experiment.

Norms for other diadochokinetic acts have been found. Jenkins (*2*) states that the mean number of jaw bites produced in a second by 21 adult males and 19 adult females was 5.43 and 5.50 respectively. Strother and Kriegman (*10*) found norms of 4.76 for the same movement. Diadochokinesis for tongue movements was reported by Strother and Kriegman to be 6.53 and by Blackburn (*1*) to be 4.59.

The rates in this study compare favorably with results from the above experiments. When the same diadochokinetic act was measured, agreement was close. Other acts involving the oral musculature gave results that tended to be lower in maximum speed. Therefore, the diadochokinesis of a commonly used neuromuscular pattern (in this case a syllable) seems to lend itself to greater speed than does diadochokinesis for a less commonly used neuromuscular pattern, such as tongue protrusions.

Differences among various diadochokinetic acts may not be surprising. A diadochokinetic sex difference in favor of men, however, certainly is—at least in the light of popular opinion that women are capable of and do talk faster than men. On this basis, most persons would assume women to be superior in an experiment such as this. The possibility that woman do talk faster than men, however, would not affect the validity of the finding that men are superior in diadochokinesis because ability and usage involve many variables. Very

few speech needs call forth full diadochokinetic ability, although according to Jenkins (2) a word group like *Methodist Episcopal Church* may approach these diadochokinetic limits.

Although the diadochokinetic findings concerning sex vary from that of popular opinion, other experiments tend to support the superiority of the male. Ream (7) reported that he and other investigators of diadochokinesis were almost unanimous in finding that males performed acts such as finger tapping more rapidly than females. On the other hand, a more recent study of Jenkins (2) found that females, 19 years and older, were slightly superior to males of like age. Most of the evidence seems to favor male superiority, however, and this present study agrees with this point of view.

The preceding pages have been concerned with the adult. At this point the developmental order of sounds in the speech of children is to be considered. When comparing diadochokinesis of consonants as found in this study with the developmental order of consonants as shown by Poole (6), the syllables which included the consonants [d], [t], [b], and [p] were most rapidly produced and were among the earliest to be mastered by children. The [f] and [v] occur approximately in the middle, both developmentally and diadochokinetically. The [s] and [z], which are among the last consonants to be mastered according to Poole, were also among the slowest in diadochokinesis. Thus there is agreement between diadochokinesis and developmental order with the exception of [k] and [g], whose slow diadochokinesis is not comparable to their developmental order.

Although diadochokinesis in adults has been studied with respect to focal articulation points, much more information might be available if a similar experiment could be performed using children. Perhaps different consonants have varying rates of development in regard to diadochokinesis. A given phoneme might be most rapid at one age level only to be passed later by another which had previously been much slower. Different diadochokinetic developmental rates and points of maturation might be found for the various consonants. Such a study might also explain certain etiological aspects of stuttering and defective articulation.

The author's interest in diadochokinesis drew his attention to persons who had recently learned to produce a given sound correctly in isolation. The observation was made that articulation cases who can produce a newly learned sound only at a relatively slow rate usually have more difficulty incorporating that sound into casual conversation than do those who can produce the newly learned sound at a relatively fast rate. Such an observation would seem logical because precision of speech tends to be secondary to transfer of ideas. The diadochokinetic implications of this observation may be worthy of further study.

Perhaps the factor of rate of speech may have even broader implications. Since society, as Johnson (3) has pointed out, places so much emphasis on fluency in speech, diadochokinetic factors may have etiological and therapeutic significance in speech variations which involve breakdown in rhythm.

Summary

1. Significant differences are present in the diadochokinesis of various syl-

lables. Since the vowel portion of the syllable was relatively constant, one could say that significant differences exist among some consonants. The consonants [t], [d], [p], and [b] are significantly faster in diadochokinesis than [s], [z], [k] and [g]. The [f] and the [v] probably occupy a diadochokinetic position between these groups of consonants. Within these groups, however, no significant difference is present, nor are there any significant differences between voiced and voiceless cognates.

2. In so far as this study is concerned, diadochokinetic sex differences exist in favor of the male. In variability of diadochokinesis, no significant sex differences were found.

3. By comparison with another similar, though limited study, the diadochokinetic means found in this study seem to be validated. When unlike types of diadochokinetic acts are compared, diadochokinesis seems to be more rapid for more commonly used neuromuscular patterns, such as syllable production.

4. With the exception of [k] and [g], there is relative agreement between the diadochokinetic rank order of consonants studied in this experiment and the developmental order of consonants in children's speech as found by Poole (*6*).

5. There are certain diadochokinetic aspects of rhythm and articulatory disorders that might prove exceptionally worthy of future study.

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A Study Of Minor Organic Deviations In 'Functional' Disorders Of Articulation:

1. Rate Of Movement Of Oral Structures

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FOR PURPOSES of classification, administration, and general orientation many speech pathologists use the terms *functional*[1] and *organic*. It is recognized that these are labels of convenience; that speech disorders to which they are affixed are not all-or-none; that so-called 'functional' disorders have their organic elements; that so-called 'organic' disorders have their functional elements. But in spite of such admirable reservations one receives the impression that examination and clinical practice are sometimes carried out as if there were a true dichotomy, and that the details of clinical practice in particular are commonly more appropriate to the labels than to the disorders. Especially does this appear to be the case with the 'functional' disorders of articulation. Minor organic deviations thought to be adverse to speech are found in many persons with adequate or superior articulation. Unguided compensations presumably have taken place. When similar deviations are observed in persons with articulatory disorders it is to be feared that their importance is minimized, and that they are often ignored in corrective procedures.

The present investigation was designed to examine the above observations experimentally. Its purposes may be stated in the form of two questions: Are there organic differences of any magnitude between persons with 'functional' articulatory disorders, as ordinarily classified, and persons without disorders? If so, what are some of the specific differences? The general procedures may best be explained in terms of a hypothetical experiment.

For reasons that will become clear, suppose that a jury of speech pathologists, employing ordinary clinical standards, were to remove from a given population of adults those individuals whom they regard as having 'organic pathologies' of the speech or hearing mechanisms, those with 'foreign dialects,' those with 'substandard regional dialects,' those whose speech

[1]In the sense of 'non-organic.'

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deviations consist *exclusively* of 'voicing errors,'[2] and those who 'stutter.' The remaining individuals would differ in articulatory ability and could be so distributed. Those at the lower end of such a distribution would usually be classified by the speech pathologist as 'functional articulatory defectives.' Suppose that there be postulated two measures: (1) A single, valid measure of *articulatory ability;* (2) a single, valid measure of the goodness of the *speech-hearing mechanism.* Let both measures be applied to the hypothetically restricted population and the results correlated. One would predict that the correlation would be low but positive. Now let the restricted population be distributed according to the measure of articulatory ability, let there be drawn from each *extreme* of the distribution a random sample, and let the samples be compared on the basis of the measure of the speech-hearing mechanism. Following the above reasoning, one would predict that the difference between the two samples would be small but significant.

It is with comparison of extreme groups that the present investigation has been concerned. But there are several differences between the hypothetical development and the actual experimentation. First, it will be noted that *single* measures of both articulatory ability and the speech-hearing mechanism were postulated. Neither, however, exists. In the absence of a satisfactory measure of articulatory ability the experimenters employed the screening criteria described under *Procedure,* which, although defensible for the identification of extremes, were not useful as quantitative measures. In the case of the speech-hearing mechanism no over-all measure was attempted, but a large number of specific measurements and estimates were made of the structure or function[3] of the following single components: (1)the movement of oral structures; (2) the lips; (3) the tongue; (4) the teeth and hard palate; (5) hearing. Separate reports, of which this is the first, will be made of each portion.

In the second place, the selective character of the college population from which the subjects were drawn clearly restricts interpretation and application of findings. This population was sampled because of availability of subjects, and because estimates of the speaking ability of all individuals already had been made, and could be used for preliminary screening as described below. With the particular issues involved this limitation probably was not unduly serious.

The third major difference between hypothetical and experimental conditions was the formation of separate sex groups. The expectation of systematic differences in dimensional measurements was the chief reason for this. It was also considered a possibility that in some items the ability groups might differ in one sex but not in the other. Such a finding, however, would need to be interpreted with caution since, as is explained below, the sex groups were not perfectly

[2]Interchange of phonetic cognates, as [s] for [z].

[3]The classification of certain *functions* (such as rate of lip movement, amount of tongue force, hearing acuity, etc.) under the 'organic' label might be questioned. The measurements were made because they promised to provide data about aspects of the mechanism which could not be readily investigated in any other way. The experimenters take the position that this usage is not crucial to the major issues of the study. The reader who disagrees is invited to interpret the findings according to definitions of terms that are acceptable to him.

matched with respect to articulatory ability.

Procedure

Selection of Subjects. Sixty young adults enrolled at the State University of Iowa, ranging in age from 17 years, six months to 24 years, four months, were selected on the basis of superiority or inferiority in articulation of consonants, equal sex groups of 15 each being formed at both ability levels as follows:

	Superior	*Inferior*
Male	15	15
Female	15	15

Preliminary identification of subjects was accomplished by studying information obtained in connection with a beginning course in speech. The records included examiners' ratings of the speaking performances made by approximately 1250 students, largely freshmen. Ratings had been made according to the method of Barnes (*1*), in which certain attributes of speaking are rated on a 1-to-7 scale. Among the items were *Pronunciation* and *Voice Control*, which afforded two bases for evaluation, neither of which was a direct measure of ability to articulate consonants, but both of which, according to the practice of examiners, included that ability. Ratings on these items for the first and last major speeches of the first semester, given approximately four months apart, were averaged separately. The preliminary lower limit of the superior extreme was defined as an average rating of 5.0 on *Pronunciation* and of 4.0 on *Voice Control*. The upper limit of the inferior extreme was established as an average of 3.0 on *Pronunciation*.

Final limits were determined by means of a direct test of ability in consonant articulation. The test, an inventory-type analysis of consonant elements, employed the materials and procedures of Fairbanks (*2*), in which loaded sentences, one for each of 25 elements, are read by the subject. Each consonant was rated on a 1-to-5 scale by two judges who served for all subjects. Both judges were professional speech correctionists with extensive experience in articulatory disorders, and with superior articulation and normal hearing by test. During the test the subject was seated at a distance of approximately 10 feet from the judges, who in turn were separated and made their ratings independently. The mean of the two ratings of each consonant was used as the ability measure for that consonant.

Persons identified by the preliminary screening were called in at random for the above test until the four experimental sub-groups were complete in number, which was accomplished with the testing of 121 persons. Three criteria of acceptance were used. The first excluded from any group persons with cerebral palsy, cleft palate, or other obvious defect of the speech mechanism, and persons with claimed hearing impairment in response to question. The intention here, in view of the purpose of the investigation, was to restrict the subjects to those ordinarily regarded as 'functional' types. The second criterion, in order to simplify the problem and on grounds of no necessary connection, excluded persons with substandard regional dialect, foreign dialect, persons whose only defects of articulation were voicing errors, and stutterers. These procedures were carried out by the experimenters, all of whom were experienced in speech pathology, and involved the usual

clinical methods of initial interview and examination. Some of the excluded cases had been studied previously by the Speech Clinic and records were available; others were not excluded until the articulation test had been completed. The third criterion employed the results of the articulation test. Since the experimenters felt that one mark of superiority is uniformity, the minimum requirements for the superior group were (1) no mean rating lower than 3.0, and (2) at least 20 of the 25 mean ratings higher than 3.0. The requirement for the inferior group was a mean rating of 1.0 (i.e., minimum rating by both judges) on at least one consonant. In the latter instance it was considered, on the basis of clinical experience, that an individual *may* be regarded as having clinically defective articulation if any one of the elements deviates extremely, and that a justifiable upper limit for the inferior groups could thus be defined. In practice only seven of the 30 inferior subjects barely met this criterion, while one subject presented five sounds rated 1.0.

It will be observed that no attempt was made to match cases for the two sex groups at each ability level, subjects who met the criteria being admitted at random. Without measures which can be used with confidence for quantitative comparison it is difficult to make statements regarding equivalence. The superior male and female groups, with a strict requirement of uniformity and a high lower limit, had mean ratings per consonant of 4.6 and 4.7, respectively. Similar figures for the two inferior groups were 3.9, with a range of 3.5 to 4.4, and 4.1, with a range of 3.8 to 4.4, but are of doubtful quantitative value considering the criteria. Another possible index for comparison of the inferior groups is the number of defective sounds per subject. The mean number of consonants rated 1.0 was 2.7 for the inferior male subjects, and 2.1 for the inferior females. In terms of number of consonants rated lower than 3.0 the male and female means were 5.1 and 3.7, respectively. The fact that all of the above values seem to indicate slight inferiority of the males is suggestive, but the experimenters do not believe that a defini-

TABLE 1. Ascending rank order of mean ratings of consonants, and number of subjects rated lower than 3.0. Thirty inferior subjects.

	Mean Rating	*Number of Subjects Rated:*		
		1.0	*Lower than 2.0*	*Lower than 3.0*
[s]	1.18	24	28	29
[ʃ]	1.40	19	23	28
[z]	1.53	12	23	28
[ʒ]	1.77	10	16	26
[tʃ]	2.05	4	13	23
[dʒ]	2.87		1	15
[ʍ]	4.02		4	5
[v]	4.20			
[l]	4.23	2	2	4
[f]	4.50			
[θ]	4.65		1	1
[t]	4.65			
[ð]	4.68			
[d]	4.73			
[ŋ]	4.78			
[r]	4.82			
[w]	4.87			
[m]	4.92			
[n]	4.97			
[k]	4.97			
[p]	4.98			
[b]	4.98			
[g]	4.98			
[h]	5.00			
[j]	5.00			

tive conclusion can be reached with these methods of estimation, which were designed to screen rather than to measure.

In Table 1 the consonant elements are arranged in ascending rank order of the mean ratings of the 30 inferior subjects. It will be noted that the usual consonants head the list. If these means are referred to the 1-to-5 scale, with 3.0 considered as 'average,' it will be seen that only the upper six fall below that value. The last three columns show the frequency of ratings lower than 3.0, and are cumulative from left to right. Much the same concentration may be observed. In only one case was the rating of [s] 3.0 or higher, while on 16 of the 25 consonants all subjects were rated 3.0 or higher. In summary, the groups of inferior subjects, restricted by exclusion to 'functional' cases, displayed distinct inferiority in articulation of only the following consonants: [s], [ʃ], [z], [ʒ], [tʃ], [dʒ]. Scattered subjects were inferior in articulation of [ʌ], [l] and [θ]. For the remaining consonants articulation was rated average-to-superior.

Three subjective observations regarding the subjects seem to be in order. First, it was the general impression of the experimenters that the articulation of the inferior subjects was unmistakably defective, while that of the contrasting subjects was definitely superior. Second, there seemed to be no sex-linked differences in articulation within either of the two ability levels. Third, the extreme groups were not obviously different in any systematic way with respect to observable superficial characteristics such as appearance, size, and manner.

Apparatus. The technique employed in the portion of the study reported here involved the recording and counting of rapid, repetitive movements as follows: (1) Approximation of upper and lower lips. (2) Vertical movement of the mandible. (3) Contact between the tongue and alveolar ridge. (4) Protrusion of the tongue. (5) Vertical movement of the eyebrow.[4] Recording was accomplished by means of apparatus which counted the total number of movements completed during a three-second interval. The main component was a vacuum tube-relay unit, similar to that described by Koepp-Baker (*3*), in which a relay was tripped when a high resistance, low amperage current (below shock threshold) was connected across the input terminals. The relay operated a Stoelting counter which recorded every make-and-break. The three-second sampling interval was produced automatically by an electronic device which disconnected the counter from the relay three seconds after the two had been connected by manual switch. The mean deviation of the interval for 50 trials was 0.0055 sec. The length of the interval was selected on the basis of preliminary tests which showed such a period to be suitable from the standpoint of sustained rate of movement.

The relay unit was activated by means of the various applicator-switches shown in Figure 1. All but the tongue-alveolar switch (II) were mounted on a framework so that they could be adjusted individually to the seated subjects. Part I shows top and side views of the contact device for tongue protrusion. The jacket, *C*, was made by flattening a piece of brass piping until it was elliptical in cross-section, its shorter diameter measuring approximately 7/8″. A bakelite plate, *D*, closed one end. An adjust-

[4]Included because of measurement in previous studies.

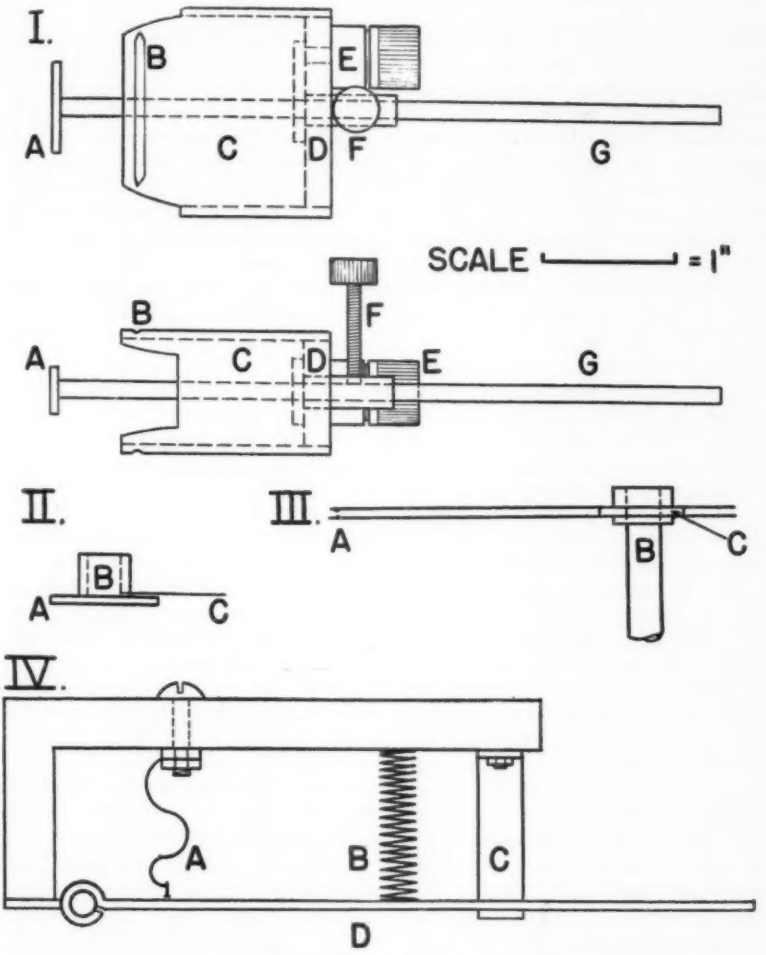

FIGURE 1. Diagrams of applicator-switches used in measuring rate of tongue protrusion movement (I), tongue-alveolar movement (II), lip movement (III), and jaw movement (IV).

able metal rod, *G*, with a metal contact plate, *A*, on one end, projected through the center of *D* and was fixed by means of a set-screw, *F*. The brass jacket, insulated thus from rod and contact plate, was placed between the subject's teeth, the grooves, *B*, receiving the incisors. Although, for purposes of explanation, plate *A* is shown projecting beyond the jacket, during experimentation the plate invariably was entirely within the jacket, anterior to the subject's incisors. Its antero-posterior position was adjusted

during a preliminary practice period by moving rod *G* until the subject judged the position to be most advantageous for maximum rate of movement. This adjustment having been made, one wire lead from the relay was connected to terminal *E*, while the other lead was fastened to the subject's ear by means of a modified brass earring. Contact between the subject's protruded tongue and plate *A*, inside the jacket, completed the circuit and tripped the relay.

Part II of Figure 1 shows a side view of the device used for tongue-alveolar contact. A hollow bakelite cylinder, B, was closed at one end by a thin bakelite disc, *A*, of larger diameter, producing the hat-shaped appliance shown. The inside of *B* was filled with solder which formed the contact point, and to this was attached a piece of No. 32, enamel-insulated, copper wire, C, leading to one relay terminal. The other terminal was connected to the subject's ear as described above. The contact device was taped to the alveolar ridge in the midline immediately posterior to the upper incisors by means of a strip of adhesive tape in which a hole large enough to accommodate *B* was cut. The area was dried with a swab before taping. Contact between the tongue and the solder core of *B* closed the circuit.

Lip movements were indicated by means of the simple switch shown at III. Made of spring bronze and mounted at a right angle to the insulated handle, *B*, the switch closed in response to a slight smacking-like movement when placed between the lips.

In IV of Figure 1 is shown a side view of the switch to indicate jaw movement. The free end of the hinged lever, *D*, was placed on the upper edges of the lower incisors. In its basic position lever *D* rested on a stop, which was formed by bending the lower end of *C* at a right angle, and which prevented further downward movement. Upward movement was opposed by a light helical spring, *B*. The relay circuit was closed whenever lever *D*, following an upward movement of the jaw, touched contact *A*. For this measurement head position was fixed by resting the upper teeth upon a wooden tongue blade which was clamped at both ends and was adjustable vertically.

The device used for brow movement is not shown since it resembled closely that for jaw movement. Essentially, it was the switch of IV, Figure 1, *inverted*, with lever *D* maintaining light contact with *A* unless raised. Downward movement beyond the position of contact was restrained by means of a stop similar to *C*; lever *D* rested upon this stop in its basic position. Spring *B* was not used. A flexible wire attached to the free end of *D* was taped to the right eyebrow, and the appliance lowered until slack was absent. A slight upward movement of the brow was sufficient to break the contact at *A* and activate the relay. The head positioner was employed as for jaw movement.

During the experimental procedure the subject was seated and the various appliances were swung into position one at a time and adjusted. The counter and relay were out of the range of vision. General instructions were to repeat the movement as rapidly as possible, beginning on signal and continuing until stopped. Each measurement was preceded by a practice period. After the subject was able to sustain the repetition and was satisfied that he had reached maximum rate, the starting signal was given. As soon as sustained movement was definitely

TABLE 2. Means, standard deviations, and differences. Units: mean number of movements per second.

Movement			*Superior*	*Inferior*	*Difference**
Lips	Male	AM	6.07	5.01	1.06
		SD	1.30	0.71	
	Female	AM	5.26	4.72	0.54
		SD	1.13	0.88	
Jaw	Male	AM	5.09	4.89	0.20
		SD	0.71	0.74	
	Female	AM	4.77	4.69	0.08
		SD	0.72	0.87	
Tongue-Alveolar	Male	AM	4.85	4.91	−0.06
		SD	0.69	0.74	
	Female	AM	4.37	4.42	−0.05
		SD	1.22	0.51	
Tongue Protrusion	Male	AM	4.63	4.02	0.61
		SD	0.95	1.15	
	Female	AM	3.42	3.85	−0.43
		SD	0.91	0.69	
Brow	Male	AM	2.53	2.40	0.13
		SD	0.91	0.74	
	Female	AM	2.14	2.22	−0.08
		SD	0.57	0.82	

*Superior − Inferior

established, the counter switch, which also started the automatic interval timer, was closed.

RESULTS

Tables 2 and 3, in which the results are presented, should be considered together for adequate interpretation. All values are expressed in mean number of movements per second, and were derived from individual means based upon the three-second sampling interval. The primary purpose of the investigation being to study rate of movement in relation to articulatory ability, comparisons of the superior and inferior groups within sex and within measure are of greatest interest. The data also permit, however, comparisons of males and females, and of the five different measures.

Study of the means and standard deviations in Table 2 shows differences of varying magnitudes in all three of the above types of comparison. That some of these differences reach significance at the 1% level was shown by an obtained F of 22.62, with approximately 1.62 required.[5] Table 3 gives the results of 'factorial' analysis, using an ability-by-sex arrangement with each measure separately. If the F ratios in the first column are compared to the required 4.16 and 2.78 at the 1% and 5% levels, respectively, it will be seen that evidence for rejection of an hypothesis of zero difference between the four groups is present for lip movement and tongue protrusion movement only.

In the case of lip movement, evaluation of the remaining ratios reveals that for articulatory ability the F of 8.35 exceeds the tabled 1% value, sug-

[5] *df*, 19 & 280

TABLE 3. Analysis of variance. Units: mean number of movements per second.

Movement		*Source of Variation*				
		*Between Groups**	*Ability**	*Sex**	*Inter-action**	*Within Groups**
Lips	*v*	5.02	9.52	4.54	0.99	1.14
	F†	4.40	8.35	3.98	0.87	
Jaw	*v*	0.44	0.26	1.01	0.06	0.62
	F	0.71	0.42	1.63	0.10	
Tongue-Alveolar	*v*	1.17	0.04	3.46	0.00	0.74
	F	1.58	0.05	4.68		
Tongue Protrusion	*v*	3.76	0.12	7.14	4.01	0.95
	F	3.96	0.13	7.52	4.22	
Brow	*v*	0.47	0.01	1.23	0.18	0.64
	F	0.73	0.02	1.92	0.28	

* *df:* Between Groups, 3
Ability, Sex, Interaction, 1
Within Groups, 56

† *F* = Given Variance/Within Groups Variance
F, 3 & 55: 1%, 4.16; 5%, 2.78
1 & 55: 1%, 7.12; 5%, 4.02

gesting the existence of a real difference. The sex and interaction values are too small for significance, although the former barely fails at the 5% level. In Table 2 the minimum differences required for significance between any two lip movement means are 1.04 at the 1% level and 0.78 at the 5% level. For ability levels within sex it is seen that this requirement is met only in males, where the difference is 1.06 in favor of the superior group. Variance was also greater for the superior male group, 1.82 compared to 0.55. The ratio of the two, *F*, is 3.31, significant beyond the 10% level. This lack of homogeneity is interesting in itself; and it does not, furthermore, alter the interpretation of the difference between means, which was found to be large enough to withstand a more rigorous test.[6]

For tongue protrusion movements, the only other measure with significantly large variance between groups, the analysis of Table 3 yields a very small *F* for ability, but a substantial value for sex. Again, according to Table 2, the difference is in favor of the male, but with the requirement of 0.95 or 0.71, however, at the 1% or 5% levels, respectively, this rate advantage is once more seen to be significant only for superior males. The *F* for interaction is significant at the 5% level, and it may be observed in Table 2 that the direction of the differences between ability groups differs for the two sexes.

In tongue-alveolar movements the *F* of 4.68 for sex is significant at the 5% level (which might be thought of as suggesting the presence of a between-sex difference, ability constant), but the variance between groups is small and the differences between the basic sex groups (Table 2) are less than the required 0.63 at the 5% level.

While it was not an objective of the study to compare the rates of movement of various structures, the data of Table 2 are worth comment in this regard. The five measures have been arranged in general descending rank order, and vertical comparison of

[6]Outlined by Snedecor (*4*, p. 83.) Given equal groups, the *t*- table is entered with one-half the indicated degrees of freedom. The difference of 1.06 was found to remain significant beyond the 5% level.

means will show that this order is preserved within three of the four subject groups. It will also be noted that the range of rate, from lip to brow movement, is substantially greater than the differences between groups for any given structure. Interpretation of the difference between any two means in a subject group may be made with a requirement of 0.86 or 0.65 for significance at the 1% or 5% level, respectively. If these criteria are used the following seem to be the outstanding points: Brow movement is invariably slower than any other; tongue protrusion movement is invariably slower than lip movement (it is also slower than jaw movement in three groups, and slower than tongue-alveolar movement in two groups); jaw movement and tongue-alveolar movement differ significantly in no instance.

Summary

From a population of young adults four groups of subjects were chosen on the basis of sex and 'functional' articulatory ability: 15 males and 15 females with superior consonant articulation; 15 males and 15 females with inferior consonant articulation. Numerous measurements of the structure or function of the speech-hearing mechanisms were made. The results of the investigation, too lengthy for a single article, are to be presented in a series, and will be summarized and interpreted in the final paper. The present report has been confined to the data on the rates of repetitive movements, expressed in mean number per second, of lips, mandible, tongue to alveolar ridge, tongue protrusion. Rate of eyebrow movement was also measured. Findings of this portion of the study were as follows:

1. All differences between ability groups were small. In lip movement a significant difference in relation to articulatory ability was found, but only for the male. In this sex a difference of 1.06 between means was obtained in favor of the superior group.

2. Differences between sex groups were consistently in favor of the male, but failed of statistical significance in most instances. The general analysis showed significant sex variance in tongue protrusion and tongue-alveolar movement, but the difference between basic sex groups, ability constant, reached significance only in tongue protrusion, and only at the superior level.

3. Some of the differences between the various structures were found to be large and significant. In all four groups movements of speech structures were uniformly found to be significantly faster than movement of the eyebrow. In descending order the speech structures ranked as follows: Lips, mandible, tongue-alveolar, tongue protrusion. Lip movement was found to be significantly faster than tongue protrusion in all four groups.

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Book Reviews

LUCHSINGER, RICHARD and ARNOLD, GOTTFRIED E. *Lehrbuch der Stimm- und Sprachheilkunde.* Vienna: Springer - Verlag, 1949. Pp. 431.

University Doctor Richard Luchsinger, Physician-in-Chief of the Department for Diseases of Speech and Voice of the Oto-Rhino-Laryngological Clinic and Polyclinic, Zurich, and University Doctor Gottfried E. Arnold, formerly Chief of the Department for Disorders of Speech and Voice of the University Ear, Nose and Throat Clinic, Vienna, have joined in the publication of this book whose title, being translated into English, means a Textbook on the Therapy of Speech and Voice. The book is divided into two main sections, one by each author. Dr. Luchsinger wrote Abschnitt I on the voice and its disorders. Dr. Arnold wrote most of Abschnitt II on speech and its disorders; one chapter of this section, however, that on the psychology of speech, was written by a colleague of the author, Prof. Friedrich Kainz, Ph.D. Another collaborator on this section was Edeltrud Baar, Ph.D. (Wien), who wrote the notes on the psychological examination of children.

In the joint foreword, dated Weihnachten, 1948, the authors state that their Christmas presentation of this book is all but overdue. They call attention to the fact that in the preceding decade no work of its kind appeared in German. Their book is intended to fill this *lücke*. One wonders if the reason for this hiatus in the German literature is hinted at in the paragraph that next follows the statement of the regrettable lapse of time in which the literature was so barren; for they go on to say that their ethical principles can best be stated in the words of Claude Bernard, 1859:

> The experimental process is that of an ideology that stands for spiritual and mental freedom. It opposes philosophical and theologic restrictions and yields to the authority of no individual school of thought. This is not pride or boasting; on the contrary, the experimenter is modest when he disavows personal authority and subordinates the dicta of man to those of experimentation and of natural law.

When the authors chose this quotation, were they thinking of Nazi ideology? Or did they have in mind the ideologic restrictions of the Kremlin? At any rate, the juxtaposition of these ideas in the Vorwort is interesting, especially in view of the facts: One author is Swiss; the other is Austrian; and Bernard, whose words they translated into German, was a Frenchman.

A further analysis of the text reveals one more reason for the lack of publication in German during the last decade. The authors give thousands of separate documentations to scientific and educational literature. Very few textbooks have as complete a covering of parallel literature as does this work. In fact, one of its values lies in its bibliographic completeness. Over 700 authors are listed in the index of names; and this list does not include all of those referred to in the text. About two-thirds of the references are to German titles, which is quite understandable. This reviewer made a random count of 319 references and found that only one-eighth of the German references were to articles written in the last decade, and of these a good share were to the authors' own works. The English titles were largely from America, and over two-thirds of them were dated during the decade that Luchsinger and Arnold found so barren in the German literature.

The contents of the textual material itself runs to over 200,000 words. No English text approaches it in completeness of coverage of the subject of disorders of speech and voice. Each author begins his section of the book with a thoroughgoing treatment of the underlying considerations of his special part of the field. Hence there are chapters on the physiology of voice, the voice and the laryngeal functions, the mechanisms of voice production, the physiology of speech, etc. After these groundworks were laid, each author developed his part

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Book Reviews is edited by Ernest H. Henrikson, University of Minnesota.

of the book intensively and extensively. To include here a complete listing of chapter headings would be extravagant of space, since all of the major aspects of the field of disorders of speech and voice are treated; but, to show completeness of covering, a listing of some of the unusual and unexpected topics may be in point. We find chapters on vocal heredity, the voice of the military commander, the voice of the orator, aphasia voluntaria, aphonia voluntaria, etc.

It is interesting to notice that in this German text great emphasis is given to disorders of hearing. Apparently, as in America, the profession of speech correction embraces the rehabilitation of hearing: hearing is regarded as an aspect of speech.

The book is well illustrated with 226 pictures. It is beautifully printed and gives one the impression that the publisher had such profound respect for the work that he gave it the best physical dress that the present manufacturing facilities of Vienna could afford.

This book is a must for the library of your university; and, if you can read German (it is easier to read than most German texts), *das Lehrbuch der Stimm- und Sprachheilkunde*, Luchsinger and Arnold, should be a part of your professional library.

ROBERT WEST.
University of Wisconsin

VAN RIPER, CHARLES. *Stuttering*. Chicago: National Society for Crippled Children and Adults, Inc., 1948. Pp. 60.

In this little book which can be read in an hour, a successful attempt has been achieved to provide 'public education and enlightenment' in regard to stuttering.

At the request of the N.S.C.C.A., Wendell Johnson supervised its preparation and submitted Dr. Van Riper's manuscript to 23 speech pathologists for comments and suggestions prior to its final revision and approval. Thus, the material represents the pooled judgment of practitioners in the field. As such, it becomes the first book to clarify those areas of 'solid agreement' about etiology and therapy for stuttering. It is a credit to those responsible for its final form that differences of opinion on minor points are subordinated to the general purpose of providing an explanation of stuttering for 'parents, first of all and above all,' as well as 'physicians, nurses, social workers, teachers, psychologists and all others who are necessarily concerned with the problems of those who stutter.' It would appear that these readers of the book must, of necessity, be impressed with the individual differences between stutterers, with the theory of no single cause or cure for this speech disorder, with the distinction between primary and secondary stuttering, and with a realization of the severe environmental penalties a stutterer experiences.

This book includes the Editor's Foreword, an introductory section on the problem of stuttering, 'How Stuttering Begins and Develops,' 'Helping the Young Stutterer,' 'Specific Corrective Procedures.' 'Helping the Older Stutterer,' 'Concluding Remarks,' a short bibliography, a description of ASHA and NSCCA, and well chosen illustrations. The book makes interesting reading, with its clever analogies, frequent examples from clinical practice, and pervasive 'conversational' quality.

The editor states that 'it goes without saying that those who presume to give advice or remedial training to stutterers will prepare themselves for this responsibility by going far beyond the reading of this modest volume.' This reviewer feels, however, that all speech clinicians would profit by reading this book, which is the product of careful collaboration by well-qualified authorities in the field.

KATHERINE F. THORN.
University of Buffalo

JOOS, MARTIN. *Acoustic Phonetics, Language Monograph No. 23*. Baltimore: Linguistic Society of America, 1948. Pp. 136.

In his first sentence, author Joos is careful to state:

> This book is not, as its title may seem to promise, an authoritative survey of an established science. Acoustic phonetics is now in its infancy. The time when general agreement will be reached on its principles is still far in the future.

He continues:

> The present book is certain to be superseded as a whole, and to be proved wrong or to require restatement at so many points that if the circumstances were at all ordinary there would be no justification for covering the ground that it covers in book form either now

> or for some years to come. But the present situation in acoustic phonetics is so very extraordinary that immediate book publication of a broad survey appears inescapable.

Here, then, is candid recognition by the author of the, for the present at least, nonverifiability of many of the concepts presented. Equally candid recognition by the reader of this circumstance is essential to full appreciation of the book.

Acoustic Phonetics is organized in five chapters: Harmonic Analysis and Basic Acoustic Theory, Further Acoustic Theory and Basic Vowel Theory, Indeterminacy and Perception, Consonants and Minor Vowel Features, and Segmentation and Decomposition. In the first of these, Joos offers lucid exposition of basic material. Sample topics are such essentials as diagramming, sinusoidal waves, harmonic analysis of complex waves, the additive principle, phase and spectrum, and filtering and reinforcement. The treatment of this material is essentially non-controversial.

In Chapter II, Further Acoustic Theory and Basic Vowel Theory, Joos presents his concept of the basic glottal spectrum, in which there is practically uniform distribution of power among an evenly spaced series of frequencies up to 3000 cycles. He suggests that, irrespective of the pitch of the fundamental, the puff or open phase of the phonatory cycle lasts about one-fiftieth of a centisecond. As background for discussion of filtering as responsible for the phonetic qualities of resonants, Joos expounds the spectogram. He then develops a plural formant exposition of vocalic quality and introduces a unique formant chart for plotting the two primary formants. He recognizes, and attempts to account for, a close correlation between these two formants, as plotted, and conventionalized vowel tongue-positions. In setting up his fixed frequency characteristics of resonants, Joos differentiates between tone quality and vowel quality, here called vowel color.

Chapter III, Indeterminacy and Perception, deals with time indefiniteness and its effects on phonetic theory. The term *smear* is used to describe related phenomena. Perception time smear is tentatively set at five centiseconds. In Chapter IV, Consonants and Minor Vowel Features, Joos mentions briefly certain features of fricatives, stops, resonants, and selected minor vowel features, as revealed by the Acoustic Spectograph. Specific references to included spectograms are extremely helpful.

In his final chapter, Segmentation and Decomposition, Joos develops his concept of these two dimensions of phonetic analysis. Speech, in its most inclusive sense, is defined as encompassing six aspects: motor neural, sound production, acoustical, hearing, speech perception, and langauge. The cross relations of segmentation and decomposition to these aspects are developed. In his introduction, Joos pointedly states that this chapter is a 'first attempt to develop a unified phonetic theory. This is pioneering work and largely speculative. It is presented here for the sake of getting something into print to be argued about.'

This reviewer hesitates, as does Professor Joos, to attempt today precise evaluation of the many doctrines or working principles enunciated in *Acoustic Phonetics*. But with respect to the need for and the immediate value of the book as a whole, less caution is indeed in order. *Acoustic Phonetics* is scholarly, provocative, and articulate.

JOHN V. IRWIN.
University of Minnesota

SOIBELMAN, DORIS. *Therapeutic and Industrial Uses of Music*. New York: Columbia Univ. Press, 1948. Pp. 274.

This is a review of the literature on the use of music in medicine and in industry. Over 400 references are cited from writings of psychologists, physicians, psychiatrists, personnel men, physiologists, physicists, musicians, recreation workers, social workers, and the unknown authors of government bulletins. Most of the entries are rather recent—from the past two decades; the mystical, armchair writings of an earlier period are sensibly rejected. The emphasis is on critically reviewing the papers and books which are either based on expert observation (clinical reports, etc.) or empirical data.

One comes away with the feeling that, in spite of the voluminous literature on so many facets of the role of music in healing sick minds and bodies and in increasing worker output and happiness, we still know so little that our practical uses of music are still on a hit-or-miss level. We know a lot about music and blood pressure in isolated laboratory experiments, but we know practically nothing about music and blood pressure in real persons with psychosomatic problems in real clinics. We

read with curiosity how a psychiatrist used music to rehabilitate a patient—a musician—but are still quite in the dark about how music can contribute to therapy when 'piped' into the wards in mental hospitals. Some researchers in industry point to improved production when music is present in the workrooms, but is it due to the rhythm, to the reduction of boredom, or to a more nebulous increase in morale due to a feeling on the part of the employees that management appreciates them?

It is apparent that more research is needed, with careful experimental conditions, into the specific psychoacoustic and psychophysiological aspects of the broad problem. Similarly, there is need for more uniform and systematic clinical observation both of cases studied intensively and of groups of cases, whether in mental hospitals or in shops.

Soibelman has done a distinct service in making some order out of the complex literature and reviewing it critically. Anyone who wishes to work in this field will do well to use this volume as a baseline for searching the problems.

This reviewer felt that music in industry and in medicine are areas of research in which progress could be made if adequate funds were available for some large-scale studies by integrated teams of medical men, psychologists, physicists, recreation specialists, personnel men, and others. Such studies in industry and in hospitals (there being much overlap in method of research and expected human outcomes) cannot be very effective when based on the piecemeal research or the casual observations that typify so much of the past literature. The time has come for clear-cut hypotheses subjected to rigorous exploration by cooperative efforts of related scientists.

HAROLD SEASHORE.
The Psychological Corporation

RAY, MARIE BEYNON. *How to Conquer Your Handicaps.* New York: Garden City Publishing Co., 1948. Pp. 327.

That a disability is an asset in disguise is the primary contention of the author of this book. The author contends that the inferiority complex which arises from a handicap produces the drive to succeed over and above the limitations imposed by a disability. In her 327-page book she illustrates her thesis by pointing to such distinguished examples as Demosthenes, Churchill, Helen Keller, Thomas Edison and Franklin Delano Roosevelt.

This is a readable book, full of interesting anecdotes about the great and the near-great which will serve two distinct purposes. For the professional person who is frequently called upon to deliver speeches, it provides a vibrant account of stories which will bear retelling. For the lay person, handicapped or non-handicapped, it is maybe a morale builder and inspiration to achievement.

The emphasis on great achievement because of, rather than in spite of, a handicap might be questionable. It must be remembered that not all people have the same abilities. It is not a handicap alone that produces men of Goya and Churchill's stature, and to imply that all men with a handicap have the incentive and ability to equal their accomplishments is not quite realistic. A person who is adjusted to his handicap and has been trained according to his abilities is no longer limited. That he can progress to the peak of his abilities is indisputable. The degree of his personal adjustment and professional success will depend, however, on his inherent ability supplemented by the training which he receives.

A substantial portion of the book is devoted to rehabilitation techniques in the fields of vision, hearing, general orthopedics, and speech. This is extremely valuable information for many lay persons who may be unaware of the facilities available to them. For the professional person, however, its value might have been enhanced if all the centers discussed were those which would meet the approval of the professional organizations.

JAYNE SHOVER.
National Society for Crippled Children and Adults, Inc.

Abstracts

ALLEN, R. M. A comparison of the test performances of the brain-injured and the brain diseased. *Amer. J. Psychiat.*, 1949, 106, 195-198.

Fifty brain-injured veterans and 36 brain-diseased veterans were studied on a neurosurgical ward for approximately one year. The adult Wechsler-Bellevue Intelligence Test is the instrument of comparison and a statistical analysis, including critical ratios, of the sub-test scores is presented. The test results show that the functioning and efficiency of the patients in both groups follow a similar pattern. This paper is the fourth in a series dealing with encephalopathy due to brain injury and brain disease. (*C. R. E.*)

TAIBL, A. The academic challenges of the ataxic child. *J. except. Child.*, 1949, 16, 11-14, 32.

Many of the considerations presented in this article, although designed primarily for the classroom teacher, may be of value to the speech therapist. Ataxia is defined as a disturbance of balance and postural or directional sense without interference with motion, either by spasticity or involuntary motion. Several ways are suggested in which the classroom teacher can help the ataxic—by providing seating that makes the child feel secure, by supervising his recreational activities to prevent falls, by avoiding requiring that the child fix his attention on printed material, by providing textbooks with larger type than the average child would use, and by encouraging him to use the best speech of which he is capable. In addition, the teacher should work in direct relation with the speech therapist, the occupational therapist, and the physiotherapist, in an attempt to assist the child who is ataxic. (*C. G. W.*)

PERLSTEIN, M. A. The current status of drug therapy in cerebral palsy. *Crippled Child*, 1949, 27, (2), 8-10.

The main factors to be considered in evaluating drug therapy for the cerebral palsied are: the effect of suggestion on the patient's subjective symptoms, the possible coincidence of spontaneous improvement or relapse with initiation or cessation of treatment, and the intrusion of masked extraneous influences on the cause of illness. In the treatment of cerebral palsy, medication is no substitute for training. Drugs serve only as an aid to special treatment directed toward training the patient.

The author presents some details about the use of vitamins and the purposes of various types of drugs. These include sedatives, anti-convulsants, alcohol, tridione, curare and other paralyzing drugs, prostigmin, myanesin, bella donna, atropine, stramonium, and others of the night-shade group. It is emphasized that drug therapy is no substitute for sane, common sense management and for the use of all other forms of treatment applicable to cerebral palsy. (*K.S.W.*)

ABEL, S. and VAN DELLEN, T. R. Congenital defects following maternal rubella. *J. Amer. med. Ass.*, 1949, 140, 1210-1212.

A questionnaire survey was made of 84 babies born of mothers who had rubella during pregnancy. The trimester of infection was indicated. The effects of the disease were tabulated.

The writers found that the most serious consequences of the disease resulted when the mother was ill during the first trimester of pregnancy. The anomalies that resulted

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Abstracts is edited by Eugene T. McDonald, Pennsylvania State College, assisted by the following committee: Jack L. Bangs, University of Washington; Leo G. Doerfler, University of Pittsburgh; Charles R. Elliott, Pennsylvania State College; William G. Hardy, Johns Hopkins University; Harry S. Wise, U. S. Marine Hospital, Boston, Mass.; and Kenneth Scott Wood, University of Oregon. The committee systematically reviews 152 journals for articles of interest to members of ASHA. Students and other members are encouraged to submit abstracts. Directions for preparing abstracts may be obtained from the abstracts editor.

were heart disease, congenital cataracts, deafness, mental deficiency, and abnormal dentition, in that order of occurrence. The importance of this problem to the worker in defects of speech and hearing is obvious and undoubtedly explains the etiology of many congenital disabilities of speech and hearing. (*H.S.W.*)

GILLMAN, J., GILBERT, C., GILLMAN, T. and SPENCE, I. A preliminary report on hydrocephalus, spina bifida and other congenital anomalies in the rat produced by trypan blue: the significance of these results in the interpretation of congenital malformations following maternal rubella. *S. Afr. J. med. Sci.*, 1948, 13, 47-90.

This is an extremely well documented and carefully set up study which shows clearly and specifically the probable mechanism at play in the production of abnormal offspring of mothers affected by foreign protein particles of which the virus of rubella is one. The findings in this article are so important to the understanding of this phenomena with relation to speech, that all speech correction teachers should bend every effort to read this article. (*H.S.W.*)

LONGMIRE, W. P., JR. and SANFORD, M. C. Stimulation of mandibular growth in congenital micrognathia by traction. *Amer. J. Dis. Child.*, 1949, 78, 750-754.

This is a report of a case of congenital micrognathia with an accompanying cleft soft palate and severe respiratory obstruction. 'The latter was relieved by suturing the tongue forward to the lower lip, a procedure that was described by Douglas.' Use of a maxillary guard attached to the nursing bottle is recommended, or if (as in the case presented) this is not feasible, prolonged gentle traction on a tantalum plate inserted behind the mandibular symphysis. The method proposed was very successful in the case reported. (*H.S.W.*)

GAFF, J. The Minnesota mobile speech unit. *J. except. Child.*, 1949, 16, 45-48, 61.

The author discusses the operation of the mobile speech unit in Minnesota as to its aims, testing methods, equipment, clinic personnel, services rendered, referrals, and types of cases discovered. It is pointed out that the survey function of the unit is not adequate unless followed up by a plan of therapy for the cases discovered. The author believes that the mobile clinic should pave the way for a successful and coordinated speech and hearing program for each community visited. (*K.S.W.*)

GRUMMON, D. L. Cellophane for one-way vision. *Amer. Psychologist*, 1949, 4, 114.

A sheet of cellophane between two panes of ordinary window glass with an illumination differential between the two rooms gives adequate one-way vision. Various colors of cellophane give different results; a little experimentation is advisable. This is a practical means to obviate the more expensive mirror type one-way vision screen. (*C.R.E.*)

COMMITTEE ON ETHICAL STANDARDS FOR PSYCHOLOGY. Ethical standards for the distribution of psychological tests and diagnostic aids. *Amer. Psychologist*, 1949, 4, 495-501.

This is a tentative statement of the APA Subcommittee on Test Distribution, Committee on Ethical Standards for Psychology. It presents a problem area, followed by selected illustrative incidents, and finally, the ethical principles or standards which appear to the group to emerge from the problem area and the incidents. There are six problem areas in all: 1. The qualifications of test users, 2. The role of a psychologist sponsoring test activities, 3. The role and qualifications of test publishers' representatives, 4. Choice of distributer for a new test, 5. Readiness of a test for release, 6. The description of tests in manuals and publications. (*C.R.E.*)

WOLFLE, D., et al. Standards for appraising psychological research. *Amer. Psychologist*, 1949, 4, 320-328.

A subcommittee of the Policy and Planning Board of the American Psychological Association discusses eight criteria of research, developed by it, for the appraisal of a field of research regardless of the setting in which it was conducted. (*C.R.E.*)

INGHAM, H. V. A statistical study of family relationships in psychoneurosis. *Amer. J. Psychiat.* 1949, 106, 91-98.

To estimate the significance of certain circumstances in family history as etiological factors in psychoneurosis, a group of 138

patients so diagnosed in the neuropsychiatric clinic of the Student Health Service at UCLA was compared to a group of control students in the same university. An analysis of 16 factors in the case histories revealed that either mental illness and/or conflict in the family is found in all items that correlate with psychoneurosis. Also, in the clinical series difficulties were likely to be multiple, averaging over double those in the control group. (*C.R.E.*)

ROFF, M. A factorial study of the Fels parent behavior scales. *Child Developm.*, 1949, 20, 29-45.

A multiple factor analysis was made of the intercorrelations between the 30 items of the Fels Parent Behavior Scales to find the basic factors present. Seven factors were found adequate to determine their intercorrelations. These were: concern for the child, democratic guidance, permissiveness, parent-child harmony, sociability-adjustment of parents, activeness of the home, and non-readiness of suggestion.

The prospective behavior of these family variables in the multiple-correlational prediction of the development of personality characteristics is discussed in the light of these seven factors. Consideration of the relations between parent practices and other characteristics of parents leads to the suggestion that the direct measurement of a personality trait of parents may be the most effective single predictor of eventual status in that trait for offspring. (*K.S.W.*)

WIENER, F. M. How we hear. *Physics Today*, 1949, 2, 8-14.

The physiology of hearing is described in moderate detail, with special emphasis upon the physical transmission of vibration through the outer and middle ear and the behavior of the basilar membrane. (*L.G.D.*)

BUCHMUELLER, A. B. and GILDEA, M. C.-L. A group therapy project with parents of behaviour problem children in public schools. *Amer. J. Psychiat.*, 1949, 106, 46-52.

Group therapy for mothers of children with behaviour problems is discussed. Two different groups, meeting in the public schools, were handled by group therapy methods approximating those described by Slavson and by Amster. Antecedent steps in developing the group meetings are described. Some examples of participation by particular mothers and the relationship of the group therapy experiences to their children's adjustment are detailed, and a comparison of experiences with the two groups is offered. (*C.R.E.*)

ADELSON, L., et al. A new approach to the education of two and three year old deaf children. *Volta Rev.*, 1949, 51, 205-208, 256-258.

That the deaf child's needs as a child must be met first is the general conclusion of this report of several teachers at JHS 47 in New York, working with the Vassar Summer Institute. The philosophy of such a program, along with equipment needs and the technique of teaching speech and the use of hearing aids, are dealt with in specific terms. (*L.G.D.*)

SCHUBERT, E. The cathode ray translator: a possible new aid for the deaf. *J. except. Child.*, 1949, 16, 7-10, 19.

The author describes the advantages and disadvantages of the cathode ray translator in teaching speech to the deaf. It is pointed out that the translator is not a perfect substitute for the monitoring function of the normal ear, that the screen is small and stationary, and that the patterns are too transitory. The advantages of the translator include the fact that most of the information which contributes acoustically to the intelligibility of speech is contained in the visual pattern. The time pattern of sounds and words is shown, and recently an indication of pitch variations of words has been added to the visual pattern.

The author discusses in detail the visual indications of time and pitch. Small photographs are presented. A description is given of the training program actually in progress with deaf children at Ypsilanti, Michigan.

It is the author's opinion that the most productive method to be used with the translator is not yet settled; that objective measures are difficult; and that the present use of such equipment represents only a small beginning. (*K.S.W.*)

HUDGINS, C. V. A method of appraising the speech of the deaf. *Volta Rev.*, 1949, 51, 597-601, 638.

The speech appraisal techniques employed in the NRC acoustic training program at Central Institute and Clarke School are described. An experimental group using experimental equipment will be compared with a control group using standard hearing aid equipment. Four 50-word phonetically

balanced lists are used, the pupil's speech being recorded after he 'is thoroughly at ease, has been allowed to read over the materials, has been coached on difficult words . . .' College students with some training in hearing deaf speech are the auditors, and the relationship between word and sentence intelligibility can be predicted. (*L.G.D.*)

SMITH, M. H. and LICKLIDER, J. C. R. Statistical bias in comparisons of monaural and binaural thresholds: Binaural summation or binaural supplementation. *Psychol. Bull.*, 1949, 46, 278-284.

The results of the modified Urbantschitsch method, commonly used to compare binaural with monaural hearing sensitivity, are questioned. The adoption of a null hypothesis is used in part to demonstrate statistical bias that might result from ignoring its application, with the additional precautions suggested. To establish adequately the hypothesis of binaural summation, that of supplementation must be clearly rejected by the evidence. To aid in this, the authors suggest three additional relevant questions that must be answered: (1) To what degree are the momentary sensitivities of the two ears correlated? (2) To what degree are successive, momentary, monaural thresholds correlated? (3) How does the precision of a threshold determination depend upon the length of time spent in making it? (*C.R.E.*)

WATSON, L. A. Are hearing clinics leading to socialized medicine? *Hearing Aid*, 1949, 2 (9), 10-13, 20-24.

Hearing clinics should not offer a hearing aid service, but should confine themselves to teaching, research, and charity. Friction between hearing aid dealers and clinics is a result of dealer mistrust and suspicion of a trend toward socialized medicine. The British Medresco government hearing aid is inferior in construction and appearance, typical of a socialistic approach to the problem of hearing loss. (*L.G.D.*)

BLACKMAN, M. That their voices may not quake. *Child. Educ.*, 1949, 26, 114-116.

From her experience in teaching, the author discusses the 'oral sharing' period in the elementary classroom as a means for helping the child to develop and maintain self-confidence in speaking before a group. This activity also encourages alertness on the part of pupils and helps the teacher to detect and understand their needs.

As a preparation for later oral reports, this presentation of experiences in oral form reveals the child's needs in the development of correct and desirable habits of speech. Self-confidence is the goal in these 'sharing' periods in the elementary classroom. (*C.G.W.*)

PEINS, M. For better speech. *Elem. Engl.*, 1949, 26, 404-406.

The role of the elementary teacher in a speech training program, according to the author of this brief article, is to discover speech problems, especially articulatory defects, by means of a 'phonetic inventory,' using picture cards or prose selections that are read by the children. Speech activities in the classroom should be geared to play interests, but a definite time for speech work may well be set as part of the classroom schedule. Speech is an integrating subject and can be used, not only as a separate part of the elementary school curriculum, but also in all recitation and classroom discussion. (*C.G.W.*)

SIGURDSON, H. K. Films for speech and hearing instruction. *Volta Rev.*, 1949, 51, 224-226, 240-242.

A list of 26 films and 28 sources of films useful in speech correction and audiology instruction is given. Also appended is a list of films on general child development. (*L.G.D.*)

GILKINSON, H. Research in speech education. *Rev. educ. Res.*, 1949, 19, 152-157.

The author reviews investigations in speech behavior which can be classified as educational research. The studies cited are those related to effects of speech training, extra-curricular activities in speech, teacher training and placement, judging and testing speech, audience response, speech of children, and correlates of speech skill.

Forty references are given. (*K.S.W.*)

BLOOMFIELD, L. A set of postulates for the science of language. *Int. J. Amer. Ling.*, 1949, 15, 195-202; reprinted from *Language*, 1926, 2, 153-164.

This reprint of one of Bloomfield's discussions of the science of language is preceded by brief editorial comment. The postulates consider such topics as form and meaning; morpheme, word, and phrase; phonemes; construction; categories, parts of speech; alternation; and historical linguistics. (*C.G.W.*)

News And Announcements

The 1950 conference of the Central States Speech Association will be held on April 14 and 15 at the Deshler-Wallick Hotel, Columbus, Ohio. Every person interested in any phase of speech is urged to attend. It is planned that for the field of speech and hearing it will be a session of evaluation and planning.

Speech correctionists and audiologists will be interested in the several sections devoted to their specialities. An added feature will be a short course on 'Speech Problems of the Brain Injured Child,' which will give credit toward membership advancement in the American Speech and Hearing Association.

A recent and significant development in CSSA is the publication of the *Central States Speech Journal.* All members of the Association are entitled to receive it; and those wishing to subscribe should write to Dr. William Sattler, Secretary-Treasurer, Department of Speech, University of Michigan, or to Dr. Lionel Crocker, Denison University, Granville, Ohio.

Other members of the executive committee to whom inquiries regarding the Association or conference may be addressed are: Paul Moore, Northwestern University; John M. Martin, Oakwood High School, Dayton, Ohio; Leroy T. Laase, University of Nebraska; and John W. Black, Ohio State University.

News And Announcements is edited by Miriam D. Pauls, The Johns Hopkins University.

The International Association for Logopedics and Phoniatrics will hold its Eighth International Convention for Speech and Voice Disturbances August 21-26, 1950, in Amsterdam, Netherlands. Previous conventions have been held in Vienna (1924, 1926, 1928, 1932), Prague (1930), Budapest (1934) and Copenhagen (1936). The main emphasis of this convention will be on constructive and original contributions and full-scale discussion. The following papers are scheduled: The International Stand of Logopedics and Phoniatrics, Renate Segre, M.D. (Buenos Aires); Sigmatisms, Branco Van Dantzig (Rotterdam); The Influence of War on Speech and Voice Disturbances, Joan Van Thal, F.C.R.S. (London); The Pubertal Change of the Human Voice, Deso A. Weiss, M.D. (New York). Additional papers may be submitted to the secretary, Deso A. Weiss, M.D., 106 East 85th Street, New York 28, N. Y. The convention is filed with the UNESCO. Official travelling agent: General Tour Inc., 724 Fifth Ave., New York.

The Midcentury White House Conference on Children and Youth is to be held in Washington, D. C. the week of December 3, 1950. It is the fifth of the White House Conferences on Children which are called at 10-year intervals by the President of the United States. The theme of this conference 'shall be to consider how we may develop in children the mental, emotional and spiritual qualities essential to individual happiness and

responsible citizenship.' Fifty-two educators, physicians, clergymen, businessmen, economists and civic, labor and farm leaders make up the National Committee. Oscar R. Ewing, Federal Security Administrator, is the chairman.

The annual meeting of the Indiana Speech and Hearing Therapist Association will be held March 17 and 18 at Purdue University. The program will include sections on Stuttering, Cleft Palate, Audiology, and Public School Planning. Prominent out-of-state speech pathologists have been invited to speak. This program will be sponsored by the Indiana Crippled Children's Association.

The American Association for Cleft Palate Rehabilitation will hold its annual meeting at the LaSalle Hotel, Chicago, April 28 and 29, with professional meetings at Northwestern University and the Professional Colleges of the University of Illinois. The program will emphasize clinical management of the young cleft palate child; local, state and national cleft palate programs and their relation to public and private health and social agencies; the basic sciences of embryology, genetics, anatomy, physiology and physiological phonetics; and dentistry, speech, plastic surgery, otorhinolaryngology and the psychosocial sciences. Information may be obtained from Herbert Koepp Baker, 904 West Adams Street, Chicago 7, Illinois.

On April 14, 1940, the Royal Institution for Deaf-Mutes at Groningen, Holland, observed its 150th anniversary. At that time, world events prohibited any celebration. It is now planned that in the week of June 5, 1950, the 160th anniversary of the Institution will be celebrated by an International Congress on the Education of the Deaf. Her Majesty, the Queen, has assumed patronage of the Congress, and the Minister of Arts and Science has assumed the Honorary Chairmanship of the Committee. An official request has been made for the appointment of one or more delegates from the United States government to the Congress. The school's board of directors hopes that all who are interested in the education of the deaf will consider attending the celebration and Congress.

The University of Missouri held its fifth annual Speech Correction Conference with the cooperation of the University of Missouri Adult Education and Extension Service and the State Crippled Children's Service on December 9 and 10. The chief speaker of the conference was Clarence T. Simon, Professor of Psychology and formerly Director of the Speech Clinic, Northwestern University.

Following a policy inaugurated a year ago, the Michigan Speech Correction Association held its mid-year meeting in cooperation with the Michigan Department of Public Instruction at St. Mary's Lake near Battle Creek, Michigan. During the 1½ day meeting, December 2 and 3, a workshop type program was presented. A general meeting dealing with speech correction techniques was followed by group sessions concerned with summer programs, legislation, cleft palate speech, stuttering, voice, and teacher training. The consensus of opinion of those attending the meeting was in favor of continuing this type of mid-year meeting.

The second annual lecture-demonstration course on hearing and deafness was presented this past winter by the Department of Audiology, University of Pittsburgh, the Eye and Ear Hospital, and the Pittsburgh League for the Hard of Hearing. The course was designed to acquaint parents of pre-school and school age aurally handicapped children, and others working with hard of hearing or deaf children or in allied fields, with some of the problems of hearing loss and modern methods of aural rehabilitation. A series of 10 weekly lectures was presented by various authorities covering many related aspects of the problem.

A workshop in speech correction was held by the speech staff of the Akron public schools under the direction of Miss Dorothy Kester, supervisor of speech education, on January 11, 16 and 18. Enrollment was limited to 50 classroom teachers and principals from the elementary grades. What the classroom teacher can do to help the speech defective in her class was the basis for the workshop of nine hours. The techniques for correction of simple articulatory disorders were discussed by the speech staff with the classroom teachers making games to be used in their own rooms. Consultants on the problems of hearing and cleft palate were Mr. George F. Weber, director of pupil personnel and research of the Akron public schools, and Dr. Joseph Ewing, oral surgeon. Mrs. Amy Bishop Chapin of the Cleveland Hearing and Speech Center closed the workshop with a talk on the opportunities for service which classroom teachers can find if they will prepare themselves to understand the problems of the child with the speech defect.

The Nineteenth Annual Rocky Mountain Speech Conference was held Feb. 16-18 at the University of Denver. Among the speakers at the convention was Dr. Wendell Johnson, director of the speech clinic at the State University of Iowa, and Dr. Herbert Thielen, assistant professor of educational psychology at the University of Chicago.

The editor of the *American Annals of the Deaf* has requested the cooperation of the American Speech and Hearing Association membership in compiling an authoritative list of university, hospital and public clinics that are prepared to offer diagnostic treatment and guidance services for the acoustically handicapped. There is an increasing international demand for information on where competent audiological services may be obtained. It will be of great value if the various centers will send a brief description of the services they are prepared to offer and the names and professional qualifications of the staff members. Of particular interest is the medical liaison. All information should be sent to Dr. Powrie Doctor, Editor, *American Annals of the Deaf*, Gallaudet College, Kendall Green, Washington, D. C.

A request has come for reprints in the field of speech pathology, neurology, or child psychiatry from Dr. F. Grewel, Chief of the Policlinic and Psychology Department, University of Amsterdam. They are working in these areas and would like to exchange publications. Any material should be sent to: Dr. F. Grewel, Psychiatrische en Neurologische Kliniek, Wilhelmina-Gasthuis (Paviljoen III), Universiteit van Amsterdam, Amsterdam, Holland.

The South African Logopedics Society, which was formed four years ago to further and uphold the interests of speech therapy in South Africa, has begun publication of the *Journal of Logopedics*. It is edited by Diana M. Whiting, Department of Phonetics and Logopedics, University of the Witwatersrand, Milner Park, Johannesburg, South Africa. The Editorial Committee invites members of ASHA to submit articles for publication.

The American Hearing Society is awarding its annual scholarship to a prospective teacher of lip reading to the hard of hearing. Known as the Kenfield Memorial Scholarship, it will be available only to a college graduate who is not already a teacher of lip reading. Applications must be filed between March 1 and May 1, 1950. Information can be obtained by writing to Miss Rose V. Feilbach, 1157 N. Columbus Street, Arlington, Virginia.

Information concerning grants in aid of research, research fellowships in speech pathology and audiology, and graduate training stipends in clinical psychology and related areas may be obtained from Dr. John C. Eberhart, Director of Research Projects, National Institute of Mental Health, United States Public Health Service, Bethesda 14, Maryland.

The Pennsylvania State Office of Vocational Education has expanded its service to speech and hearing handicapped persons over 16 years of age. The program stresses the psychosocial adjustment of the client as an integral part of speech retraining, and is conducted on a residential basis. The Speech and Hearing Clinic of Pennsylvania State College is now operating four centers in co-operation with the Bureau of Rehabilitation. They are located at State College, Harrisburg, Erie and Altoona. Dr. Charles Elliott directs the State College center, and Dr. Eugene T. McDonald supervises the other three centers.

Bowling Green State University and the Ohio Society for Crippled Children are sponsoring a new Cerebral Palsy Center which opened Oct. 10. Twelve children, ranging in age from four to seven, from eight Ohio counties are the first group to undergo treatment at the Center. Miss Adeline McClelland directs the Center which is housed in the new $180,000 Speech Building completed last summer.

Western Reserve University's 1950 Summer Session beginning June 19 offers the following courses necessary for certification and preparation in the fields of speech, deafness, hearing aid centers and hospitals. *Audiology:* hearing conservation, lip reading, hearing aids and practice in fitting; *Speech Therapy:* introductory and advanced techniques, speech pathology, orientation for majors in allied fields; *Teaching the Deaf:* beginning and advanced courses in speech, language, reading and elementary subjects and pre-school training. A clinic load of 375 children and adults at the Cleveland Hearing and Speech Center including demonstration classes of pre-school articulation, stuttering, delayed speech and cleft palate students will be available for observation, also practice teaching of older pre-school deaf children.

The Council on Physical Medicine of the American Medical Association

has expanded its services to include rehabilitation. Its name has been changed to the Council on Physical Medicine and Rehabilitation.

Cornet Films released in December two more guidance films which discuss the problems of youth. *You and Your Parents* and *Act Your Age* are designed to offer youth leaders and teachers a means of objectively discussing, respectively, the problems of parental authority and emotional maturity.

Graduate Assistantships

In the last issue a new section was introduced devoted to information concerning graduate assistantships in speech and hearing disorders and speech science available at various universities. This section will be restricted to part-time appointments only; it will not include full-time positions, scholarship grants, or tuition scholarships.

Directors of units and heads of departments are invited to submit listings to the News and Announcements Editor. Information should include formal titles of position, institution, and unit; dates, general duties, and remuneration; name and address of persons receiving applications. Copy will be accepted at any time, but the deadline for each issue is two and one-half months prior to the publication date.

Clinical Assistantships. University of Pittsburgh. Department of Psychology. Starting September, 1950. Half-time; 20 hours per week for five graduate assistantships. $1000; remission of fees and permit a student to carry a three-quarters graduate load working toward the masters or doctorate in speech pathology and audiology. Address Jack Matthews, Speech Clinic, University of Pittsburgh, Pittsburgh 13, Penna.

Clinical Assistantships. University of Illinois. The Speech Clinic, Department of Speech. Starting September or February. Half-time; 20 hours per week of clinical assistance. $1200 for nine months; remission of tuition. Student expected to enroll for three-fourths of normal graduate course load. Address Karl R. Wallace, 138 Lincoln Hall, University of Illinois, Urbana, Illinois.

Clinical Assistantships. Western Reserve University (Employment in the Cleveland Hearing and Speech Center). Half-time; 20 hours per week on a 12-months' basis, with two weeks' vacation. One $1400 Fellowship (clinical and research duties); two $1000 Associate Assistantships; two $900 Graduate Asistantships; one $1000 Clinical Psychologist (Speech Pathologist). Remission of tuition on 18 hours of credit within the academic year. Address George Fortune, Cleveland Hearing and Speech Center, 11206 Euclid Ave., Cleveland 6, Ohio.

Research Assistantships. University of Illinois. The Speech Research Laboratory, Department of Speech. Starting June, September or February. Half-time; 20 hours per week of laboratory research assistance. $1200 for nine months, or $1465 for eleven months; remission of tuition. Student expected to enroll for three-fourths of normal graduate course load. Address Grant Fairbanks, 321 Illini Hall, University of Illinois, Urbana, Illinois.

Personals

S. Richard Silverman, Director of Central Institute for the Deaf, has been elected a Fellow of the British Royal Society of Medicine.

Ruth Curtis has been appointed Instructor, and senior clinician of the children's division of the Speech Clinic of the University of Michigan.

Elizabeth Walpole has accepted a staff appointment as speech therapist in the Department of Otolaryngology of the Cincinnati General Hospital.

Dr. Stanley Ainsworth, who has been teaching at Ohio State University, has joined the staff of the Department of Speech, Florida State University.

Dr. Marie Mason, of Ohio State University, died December 8, 1949. Dr. Mason had been with the Department of Speech continuously since 1930. Her pioneer work in developing visual aids for teaching lip reading was widely recognized in England and throughout the United States.

REPORT OF THE CONVENTION

American Speech and Hearing Association

CHICAGO, ILLINOIS, DECEMBER 27-30, 1949

COUNCIL MEETINGS

December 27, 1949, 3:00 p. m.

Members present were D. W. Morris (presiding), Raymond Carhart, Grant Fairbanks, Margaret Hall, Wendell Johnson, Herbert Koepp Baker, George A. Kopp, Eugene T. McDonald, Elvena Miller, Henry M. Moser, S. Richard Silverman, M. D. Steer, and Robert West.

Minutes of 1948 Convention. Minutes of the 1948 annual convention at Washington, D. C. were approved as published in the March, 1949 *Journal of Speech and Hearing Disorders.*

Report of Vice-President. Steer expressed his appreciation of the services of the members of his committee and others who aided in arranging the 1949 program. Attention was called to the nature and variety of the topics on the program and the qualifications of persons presenting them.

Moved by Johnson and seconded by Fairbanks that the report be adopted with commendation. Passed.

Report of Secretary-Treasurer and Business Manager of the Journal. Kopp presented a report on the financial status of the Association and of the Speech Correction Foundation, and included in the report an itemized inventory of copies of all publications of the Association. (A written copy of this report is on file in the office of the Secretary-Treasurer.)

Moved by Fairbanks and seconded by Johnson that the report be accepted. Passed.

Report of the Editor of the Journal. Fairbanks called the special attention of the Executive Council to the work of the Associate Editors, the Assistant Editors, the Assistant to the Editor, and the Business Manager. He stated that the constant evidence of their effort, imagination, wisdom, and high standards had been a stirring experience. Activities of the Editorial Staff, appointments to the staff, contributions of the University of Illinois, an analysis of material published, publication of the Directory, investigation of advertising, changes in format of the *Journal*, and proposals for 1950 were presented. (A written copy of this report is on file in the office of the Secretary-Treasurer.)

Moved by Steer and seconded by Carhart that the report be adopted with commendation. Passed.

Report of the Foundations Committee. Johnson reported that 'the Speech Correction Foundation has become the Speech Correction Fund by joint action of the Council of the American Speech and Hearing Association and the Board of Trustees of the National Society for Crippled Children and Adults.' The report presented an explanation of the objectives and administrative responsibilities of this joint enterprise. (A written copy of this report is on file in the office of the Secretary-Treasurer.)

Moved by Fairbanks and seconded by West that the report be adopted with commendation. Passed.

Council action by mail during 1949 to charge to the Association the deficit of the Speech Correction Foundation approved by acclamation.

Morris asked that, with Council approval, Johnson write to the Speech Correction Foundation Chapters explaining the action of the Association in dissolving the Speech Correction Foundation. Granted.

Moved by Johnson and seconded by West that the Speech Correction Fund Committee formally dissolve the Speech Correction Foundation, void its constitution and take such other action as necessary to adjust the American Speech and Hearing Association to the program of the Speech Correction Fund as reported and approved by the Council on December 27, 1949. Passed.

With Council approval Morris appointed Fairbanks, Johnson, Baker, and Carhart as a committee to discuss the relationships of ASHA to the National Society for Crippled Children and Adults in raising funds through activities of the Speech Correction Fund Committee. This committee was instructed to report its recommendations at the next meeting of the council.

At the request of the chairman, Johnson reported on the publication of the pamphlet on *Stuttering*, and the book on *Speech Problems of Children.*

Moved by Johnson and seconded by Miller that the 1000 copies of the booklet on *Stuttering*, to be supplied to ASHA, be distributed in the same manner as reprints from the *Journal* and at the price charged by the National Society for Crippled Children and Adults. Passed.

Moved by Fairbanks and seconded by Carhart that the ASHA express its gratitude and appreciation to the National Society for Crippled Children and Adults. Passed.

Moved by Johnson and seconded by Steer that the Secretary be instructed to write letters of appreciation for the splendid cooperation and financial assistance received from the University of Illinois, State University of Iowa, Ohio State University, and Wayne University. Passed.

Moved by Johnson and seconded by Carhart that the description of the ASHA as prepared by Fairbanks for inclusion in the SAA directory be approved. Passed.

Meeting adjourned at 6:30 p. m.

December 27, 1949, 7:30 p. m.

Members present were D. W. Morris (presiding), Raymond Carhart, Grant Fairbanks, Margaret Hall, Wendell Johnson, Herbert Koepp Baker, George A. Kopp, Eugene T. McDonald, Elvena Miller, Henry Moser, S. Richard Silverman, and M. D. Steer.

Report of Committee on Exchange of Materials. DiCarlo reported the activities of his committee and emphasized the desirability and possibility of utilizing existing complications of auditory and visual aids. Expenses incurred by the committee were discussed.

Moved by Silverman and seconded by Steer that the report be adopted with commendation. Passed.

Moved by Silverman and seconded by Steer that the Committee on Exchange of Materials explore the possibility of joint publication and distribution of lists of materials. Passed.

Moved by Baker and seconded by Steer that $45.00 expenditure during 1949 by the Committee on Exchange of Materials be paid by ASHA and that an additional $100.00 be provided for the Committee for 1950. Passed.

Moved by Fairbanks and seconded by Baker that the proposal of the Speech Association of America for a united business office with a single full-time secretary be acknowledged with appreciation and that the Council take it under advisement. Passed.

Moved by Silverman and seconded by Carhart that the Council look with favor upon the establishment of a cooperative interorganizational committee with the Speech Association of America to coordinate activities of the two Associations, especially in a year when the associations meet separately. Passed.

Report of Committee on Academic and Professional Preparation. Brown reported for Palmer, who was absent. (A written copy of this report is on file in the office of the Secretary-Treasurer.)

Moved by Baker and seconded by Johnson that the report of the Committee on Academic and Professional Preparation be duplicated in sufficient quantity for distribution to Council members and that consideration be given to it at a later meeting. Passed.

Report of Committee on Credentials. Hall reported activities of the Committee on Credentials, including a financial statement, number and classification of applications processed, need for clarification of terms involved in membership requirements and further definition of membership standards, systematization of committee action on membership applications, preparation of new forms, examinations, clarification of "Short Courses" and made recommendations to the Council. (A written copy of this report is on file in the office of the Secretary-Treasurer.)

Moved by Johnson and seconded by Steer that the report be approved for discussion. Passed.

After considerable discussion it was moved by Steer and seconded by Johnson that the Council adjourn until the 8:00 p. m. meeting, December 28, in order to study the re-

port of the Committee on Credentials. Passed.

Meeting adjourned at 10:40 p. m.

December 28, 1949, 8:00 p. m.

Members present were D. W. Morris (presiding), Raymond Carhart, Grant Fairbanks, Margaret Hall, Wendell Johnson, Herbert Koepp Baker, George A. Kopp, Eugene T. McDonald, Elvena Miller, Henry Moser, S. Richard Silverman, M. D. Steer, and Robert West.

Deso A. Weiss, representing the International Association of Logopedics and Phoniatrics, was recognized by the chairman. He extended an invitation to members of the ASHA to attend the convention of his association in Amsterdam, Holland on August 21-26, 1950.

Moved by Fairbanks and seconded by Baker that an announcement of the invitation be published in the *Journal*. Passed.

Report of Committee on Credentials (cont.) Carhart read a letter from Palmer proposing changes in types of membership and qualifications for membership.

After 50 minutes of discussion, Morris, with the approval of the Council, postponed further discussion of questions raised in the report of the Committee on Credentials to hear the report of the Committee on Ethical Practice.

Report of the Committee on Ethical Practice. Westlake reported the activities of his committee and made three proposals to the Council concerning qualifications of persons in private practice, persons in charge of training teachers and clinicians, and state and municipal standards for certification of teachers in speech correction and audiology. He stated that in another capacity, Chairman of the Committee on Problems in Speech Correction and Pathology of the Speech Association of Amercia, he had asked the Executive Council of SAA for permission to conduct a questionnaire survey of the teaching and clinical activities of the SAA membership. He mentioned the possibility of publishing a summary of the survey in the *Quarterly Journal of Speech*, in which summary the standards of ASHA could be incorporated as an integral part.

Moved by Silverman and seconded by Carhart that the report be accepted for consideration. Passed.

Virgil A. Anderson was recognized by the Chairman. Anderson presented himself as a committee of one from the Executive Council of the Speech Association of America then in session, to extend to the ASHA an invitation to join with SAA in annual convention after 1950. He explained that the SAA would hold its 1951 convention in Chicago and its 1952 meeting in Cincinnati. Tentative plans included meeting in Chicago in 1953, New York in 1954, and somewhere in the West in 1955.

Moved by Silverman and seconded by Steer that the invitation from SAA be accepted for consideration. Passed.

After a friendly discussion of the invitation, it was moved by Fairbanks and seconded by Johnson that, in response to Anderson's communication from the Executive Council of the SAA, we inform that body that we are committed for 1951, that we thank them for the invitation for 1952 and will consider it, and that we will gladly discuss the question of later joint meetings, especially if consideration be given to meeting at a time other than the Christmas vacation. Passed.

Moved by Johnson and seconded by Steer that the President appoint a committee, to include the members of the Committee on Academic and Professional Preparation present at the convention, to report back to the Council Thursday evening, December 29, 1949 regarding recommendations designed to implement the second plan set forth in the Report of the Committee on Academic and Professional Preparation submitted on December 27, 1949. Passed.

(During the discussion that followed Spencer F. Brown suggested from the floor that the president appoint a committee to be known as the Committee on Reorganization, consisting of six members with the President, Editor, and Secretary-Treasurer as additional members *ex officio*, and entrusted with the task of revising membership standards, including if it seemed necessary the reorganization of classes and levels of membership. This function was to be given exclusively to the new committee and the Committee on Academic and Professional Preparation was to be relieved of all such powers and duties. The committee was to be directed to consider not merely the narrow problems of standards for a given type of membership, but also the larger problems of the aims and methods

of the ASHA, and the most appropriate framework within which they might be carried out. The committee was to prepare a report which would be circulated to the entire membership at least two months before the 1950 convention in Columbus, so that there might be ample discussion of its recommendations by the entire membership, with careful consideration of all pertinent issues, so that action might be taken at the 1950 convention.)

Moved by Johnson and seconded by Steer that the committee provided for in his previous motion also recommend methods of implementing the work of the Committee on Credentials. Lost.

Moved by Johnson and seconded by Steer that the committee provided for in his previous motion report on the advisability of polling members concerning changes in structure of membership as recommended by Brown. Passed.

Report of the Committee on Terminology. Robbins reported that the revised *Speech Dictionary* had been printed and was being assembled. Enough copies had been shipped to the Secretary-Treasurer to supply all cash orders to date. The Committee made seven recommendations to the Council pertaining to the use and distribution of the Dictionary and the future composition and work of the Committee. (A written copy of this report is on file in the office of the Secretary-Treasurer.)

Moved by Johnson and seconded by Baker that the report be accepted for consideration. Passed.

It was moved by Fairbanks and seconded by Baker that the Committee provided for in Johnson's motion be reconstituted to consist of five members of the Council. Passed.

Morris appointed the following Council members as the Committee: Carhart, Silverman, Fairbanks, West, and Johnson, Chairman.

Moved by West and seconded by Johnson that the Council adjourn until 9:00 a. m., December 29, 1949. Passed.

Meeting adjourned at 11:20 p. m.

December 29, 1949, 9:00 a. m.

Members present at some time of this meeting were D. W. Morris (presiding), Raymond Carhart, Grant Fairbanks, Margaret Hall, Wendell Johnson (presiding part of the time), Herbert Koepp Baker, George A. Kopp, Eugene T. McDonald, Elvena Miller, Henry Moser, S. Richard Silverman, M. D. Steer, and Robert West (presiding part of the time).

Report of the Committee on Credentials (cont.) Hall presented the recommendations of the Committee on Credentials regarding applications for membership or advanced standing in the Association. Discussion of the recommendations was interspersed with consideration of matters related to the Committee's work. The Council elected to membership or promoted 225 persons (see list below) recommended by the Committee on Credentials.

Meeting adjourned at 12:40 p. m.

December 29, 1949, 8:30 p. m.

Members present were D. W. Morris (presiding), Raymond Carhart, Grant Fairbanks, Margaret Hall, Wendell Johnson, Herbert Koepp Baker, George A. Kopp, Eugene T. McDonald, Elvena Miller, Henry Moser, S. Richard Silverman, M. D. Steer, Robert West, and Harold Westlake.

Report of ASHA Consultants to the National Society for Crippled Children and Adults. Baker presented a comprehensive written report of the joint speech and hearing program conducted during the year by the National Society for Crippled Children and Adults in cooperation with the Association. Emphasis was placed on speech and hearing activities in programs for the handicapped, including stimulation of new developments, guidance of state and local programs, and formulation of an over-all, nationwide program with continuing emphasis on the importance of speech and hearing problems. (A written copy of this report is on file in the office of the Secretary-Treasurer.) Baker discussed briefly the Exhibit Symposium on Speech Rehabilitation at the June, 1949 convention of the American Medical Association in New York.

Moved by Fairbanks and seconded by Steer that the report be accepted with commendation. Passed.

Moved by Fairbanks and seconded by Johnson that Baker and Hall be named as ASHA Consultants to the National Society for Crippled Children and Adults during 1950. Passed.

Report of the Special Committee on Reorganization. Moved by Johnson and seconded by Carhart that a motion to be pre-

sented orally by Fairbanks be considered by the Council. Passed.

Fairbanks used a blackboard and diagramed the types of memberships the ASHA has had in the past, the classification used at present, and the proposed classification for the future. Included in the explanation was the separation of requirements for membership in ASHA from the requirements for certification of clinical competence by ASHA.

After discussion Morris ordered a brief recess so that the committee could prepare a written recommendation to the Council.

Meeting adjourned at 9:45 p. m. and reconvened at 10:00 p. m.

Moved by Johnson and seconded by Fairbanks for the Committee that the Executive Council recommend to the membership the adoption in principle of a plan for membership and certification as follows:

1. Separation of requirements for membership in ASHA from requirements for certification of clinical competence by ASHA.
2. Membership classifications as follows:
   a. *Associate* (no requirement or time limitation of tenure.)
   b. *Member* (Bachelor's degree with a major in the general area.)
   c. *Fellow* (no requirement; election by invitation only.)
3. Certification at two levels, basic and advanced, in speech pathology and/or audiology. (Special requirements to be defined after study, but to include status as a Member or Fellow.)
4. Present Associates to become Associates; present Clinical and Professional members to become Members; present Fellows and Honorary Fellows to become Fellows.
5. Present Clinical members to receive Basic certification; present Professional members and Fellows to receive Advanced certification.

During the discussion of the above motion it was moved by Fairbanks and seconded by Baker that the motion be amended by inserting in parentheses after the word, 'follows' in the opening statement of the motion, 'The parenthetical materials herein are intended to suggest rather than to specify.' Passed.

Moved by Kopp and seconded by Johnson to amend the motion by inserting at the end of the motion, 'It is understood that the details of the proposed plan are tentative and that the completed plans are subject to approval by the Council and the membership.' Passed. Motion passed as amended.

Moved by Johnson and seconded by Kopp that the Council meet in April at the time and place of the Central States Speech Conference. Passed.

Moved by Johnson and seconded by Silverman that the Special Committee on Reorganization (Carhart, Fairbanks, Silverman, West, and Johnson, Chairman; plus the Secretary-Treasurer) report to the Executive Council at its next meeting in April, the report to consist of recommendations regarding: (1) changes in committee structure made necessary by the proposed plan, and (2) recommendations regarding the implementation of revised proposals for certifying clinical competence. Passed.

Moved by McDonald and seconded by Steer that a report of such plans as may be approved by the Council be mailed to all members of ASHA including Associates. Passed.

The President having previously instructed the Special Committee to interpret the By-Laws for the Committee on Credentials, Johnson moved and West seconded the following interpretations:

1. *Section 8, II, A, 1.* 'Equivalency of this preparation' is to be so interpreted as to provide for acceptance of courses in the areas of audiology and of psychology of speech.

2. *Section 8, II, A,* 2. Such courses in audiology and psychology of speech as are referred to above as constituting equivalence shall no longer be regarded as allied subjects under Section 8, II, A, 2.

3. *Section 8, II, A, 4.* The requirement of one year of supervised experience shall be interpreted as being nine months long and as being either full-time paid experience, such as in a public school or clinical situation, or at least a one-half time clinical assistantship (approximately 15 or more hours per week) in a training center. In the latter case, the stipulation that this experience shall be gained after the training presented by the candidate as satisfying paragraphs 1, 2, and 3 of Section 8, II, A shall be observed.

4. *Section 8, II, B.* Observance of this paragraph shall continue as specified.

5. *Section 8, III, B. 2.* Supervision of the three years clinical experience is not necessary under the provisions of this paragraph.

6. *Section 8, III, B, 3.* The alterations specified in paragraphs 1 and 2 above shall apply here.

7. *Section 8, III, C.* Observance of this paragraph shall continue as specified.

Motion passed.

Moved by Johnson and seconded by Kopp that a telegram of felicitation be sent to Councilor Martin F. Palmer, absent from the convention because of illness. Passed.

Moved by Steer and seconded by Fairbanks that the Secretary-Treasurer be instructed to prepare an index of *Journal* references to constitutional changes since 1943 for the Editor of the *Journal*. Passed.

Moved by Baker and seconded by Silverman that the previous motion to print the Constitution, which had been passed at the 1948 convention, be rescinded. Passed.

Moved by Johnson and seconded by Kopp that the Council instruct the incoming president concerning action to be taken in respect to the White House Conference. Passed.

Report regarding the Graduate Record Examination was presented by Eugene T. McDonald. Moved by Johnson and seconded by Fairbanks that the report be accepted. Passed.

The status of the Bulletin on Speech Correction being prepared for the National Association of Secondary School Principals by a group headed by Stanley H. Ainsworth was reported by Fairbanks. Moved by Johnson and seconded by Fairbanks that Ainsworth continue his work on preparing the Bulletin. Passed.

A letter from Edmund A. Cortez requesting ASHA endorsement of a speech survey in New England was read. No action taken.

McDonald presented a brief explanation of the development of Sigma Alpha Eta. No action taken.

Moved by Johnson and seconded by Steer that the report of the Committee on Terminology, made in earlier meeting, be accepted, except for the first and last statements of the report. Passed.

National Hearing Council. Proposal of a National Hearing Council had been made through the mails by Norton Canfield representing the American Academy of Ophthalmology and Otolaryngology.

Moved by Carhart and seconded by Fairbanks that the Executive Council of ASHA favors the general principle of a council for integrating efforts in the field of hearing, but wishes further clarification of the purposes of such a council and of the relationship of these purposes to existing professional organizations, and offers the opinion that the projected activities of the National Hearing Council as stated are so inclusive that they overlap with the activities and purposes of existing organizations. Passed.

Resolutions Committee. Morris appointed McDonald, Baker, and Johnson, Chairman, as the Resolutions Committee for the Convention.

Report of the Nominating Committee. The Nominating Committee, consisting of Brown, Carhart, Johnson, Westlake, and Moore, Chairman, recommended for approval the following nominees:

President: Wendell Johnson
President-Elect: M. D. Steer
Executive Vice-President: Ernest Henrikson (1951-1954)
Vice-President: Henry Moser
Vice-President-Elect: Harlan Bloomer
Secretary-Treasurer: George A. Kopp
Councilors: Ollie Backus, Gordon Peterson

Moved by Carhart and seconded by Johnson that the report of the Nominating Committee be adopted. Passed.

Report of Honors Committee. Morris reported that the committee had no recommendations for Honors of the Association.

It was moved, seconded, and unanimously carried that the Honors of the Association for distinguished contributions to the field of speech and hearing be awarded to Retiring President D. W. Morris and to Dr. Harvey Fletcher, statements of these awards to be published in the March, 1950 issue of the *Journal of Speech and Hearing Disorders*, together with portraits of Dr. Morris and Dr. Fletcher and summaries of the achievements for which the awards are granted.

Kopp presented the need for making the payment of dues coincide with the fiscal year. (Dues are payable on calendar year basis; fiscal year runs from July 1 to June 30.)

Moved by Fairbanks and seconded by Johnson that the Secretary-Treasurer, if he finds it desirable, make such a change. Passed.

Moved by Baker and seconded by Carhart that the Association bear the hotel room expense at conventions, when necessary, for the President, Vice-President, Executive Vice-President, Secretary-Treasurer and his assistant, and Editor. Passed.

Moved by Johnson and seconded by McDonald that the Council instruct the Secretary-Treasurer to reduce the joint dues of married members by the amount of one subscription to the *Journal* ($3.50). Passed.

Moved by Carhart and seconded by Johnson to table the suggestion to provide an inactive status for members of the ASHA who are not actively engaged in the field. Passed.

Moved by Johnson and seconded by Hall that the Secretary-Treasurer be instructed to work out a plan to establish an Employment Bureau for ASHA members to be presented at the April meeting of the Council. Passed.

Moved by Fairbanks and seconded by Steer to table the suggestion of a member that an insignia or badge be designed for the Association to be worn to distinguish speech and hearing therapists from other workers in institutions. Passed.

Moved by Steer and seconded by Johnson that the Editor of the *Journal* be appointed as official correspondent to represent ASHA on the staff of the publication *Speech* at the University of Nottingham, England. Passed.

Moved by Johnson and seconded by Steer that the request from the Public Relations Counsel of the American Medical Association for a resolution opposing compulsory health insurance be ignored. Passed.

Meeting adjourned at 1:20 a. m., December 30.

December 30, 1949, 3:40 p. m.

Members present during all or part of this meeting were Wendell Johnson (presiding), Raymond Carhart, Grant Fairbanks, Margaret Hall, Herbert Koepp Baker, George A. Kopp, Eugene T. McDonald, Elvena Miller, Henry Moser, D. W. Morris, S. Richard Silverman, M. D. Steer, and Robert West.

The Council was informed that Johnson and Bloomer were working on the time and place of the 1951 meeting.

Moved by Morris and seconded by Silverman that the Committee on Liaison be instructed to investigate the possibilities of times and places for meetings in 1952, 1953, 1954, and report to the Council. Passed.

Moved by Carhart and seconded by Fairbanks that the Committee on Credentials, acting in cooperation with the President and Council, present to the Council a list of Professional Members to be considered for Fellowship. Passed.

Moved by Baker and seconded by Silverman that the Secretary-Treasurer be authorized to procure an engraved gavel for retiring presidents. Passed.

Moved by Fairbanks and seconded by Carhart that the provision for electing the Nominating Committee by mail ballot, as passed at the 1948 convention, be rescinded. Passed.

Moved by Hall and seconded by West that the immediate five past presidents be the Nominating Committee. Passed.

After a brief discussion of matters relating to the work of the Committee on Credentials, it was moved by Morris and seconded by Steer that the Committee be instructed to complete business for the Council on applications presented at the 1949 convention. Passed.

Meeting adjourned.

Business Meetings

December 28, 1949, 4:50 p. m.

President D. W. Morris called the meeting to order and asked the Secretary-Treasurer to summarize his annual report.

Moved by M. D. Steer and seconded by Wendell Johnson that the report of the Secretary-Treasurer be adopted with commendation. Passed.

Moved by Grant Fairbanks and seconded by Steer that the Association express its deep appreciation of the actions of persons concerned with the publication of the booklet on *Stuttering* and the book on *Speech Problems of Children*. Passed.

Actions of the Council to date were summarized by Morris.

Moved by Paul Holtzman and seconded by Samuel D. Robbins that actions of the Council to date be approved. Passed.

Morris urged members to attend the open meetings of the Council and give the Council the benefit of their suggestions on matters being discussed.

Moved by Robert Milisen and seconded by Steer that the Liaison Committee be empowered to study the problem of advertising by members of the Association and report their findings at the next convention. Passed.

Meeting adjourned at 5:50 p. m.

December 30, 1949, 1:30 p. m.

The meeting was called to order by the Vice-President, who introduced the officers and councilors and expressed his appreciation to the members of his program committee for the excellent program arranged for this Anniversary Convention. Members who were present and participated in the formation of the Association 25 years ago were introduced. Those present were Jane Zimmerman, Samuel Robbins, and Robert West. The meeting was turned over to President D. W. Morris, who called the audience to standing tribute to Zimmerman, Robbins, and West.

Morris expressed his gratitude for the cooperation received from the officers and members of the Association during his presidency. He mentioned the nature of the transitional period of the Association, and opened for discussion the motions on reorganization that the Council recommended.

Moved by Harlan Bloomer and seconded by Robert West that the present membership structure be further reviewed and that the Council appoint a committee to report to the members. A voice vote was taken and the motion declared passed. Division of the house was called for. Motion lost, 35 to 27.

The motion introducing the tentative plan on reorganization as recommended by the Council (see above) was read by the Secretary-Treasurer. Discussion followed. Passed.

The motion providing for a Committee on Reorganization as recommended by the Council was next introduced.

Moved by Claude E. Kantner and seconded by Gordon Peterson to amend the motion by adding the name of Margaret Hall to the committee. Amendment passed.

Passed as amended.

The Council's recommendations on interpretation and definition of terms and requirements for membership were read. Morris asked Wendell Johnson to prepare a clear and concise summary of the contents of the recommendation for later presentation.

Morris reviewed actions of the Council not presented at the first Business Meeting.

Moved by M. D. Steer and seconded by Miriam D. Pauls that the actions of the Council to date be accepted and approved. Passed.

Moved by George A. Kopp and seconded by Johnson that the three-year terminal period for Associates whose memberships expire this year be extended one year. Passed.

Kopp asked for and was given the chair to present to the members the recommendations of the Council that the Honors of the Association for 1949 be extended to D. W. Morris and Harvey Fletcher. Passed by acclamation.

Chair returned to Morris.

Report of the Resolutions Committee. Read by Herbert Koepp Baker for the Committee:

Resolved: That the ASHA express its warm appreciation of the competent devotion to the profession's best interests of its distinguished retiring President, Dr. D. W. Morris. The accomplishments that have marked his Presidency are the benevolent extension of a long series of remarkably fruitful achievements and these achievements have been thoroughly oriented toward the enrichment of life for an ever-growing number of his fellows. His constructive effects on our organization and our profession shall become ever more far-reaching with the passage of time.

Resolved: That the ASHA make a matter of record its appreciation of the warm-hearted and clear-minded contributions of Miss Elvena Miller to the development of our organization's potential for social betterment during her term of office as an Association Councilor.

Resolved: That the ASHA reaffirm, on the occasion of his completion of still another term of service as Association Councilor, its ever-deepening respect and affection for Professor Robert West, our great friend and elder statesman.

Resolved: That the ASHA recognize formally the devoted and effective efforts of Professor M. D. Steer who, in his capacity as Vice-President and Program Chairman during 1949, has welded together the resources of our profession to produce an extraordinarily successful convention. We are fortunate to have had Professor Steer's administrative ability at our disposal, and we are grateful for his achievements in our behalf.

Resolved: That the ASHA extend to SAA its warm hand of good fellowship, and express its gratitude for the thorough-going good spirit of cooperation which has made the present very successful joint convention possible. We are particularly grateful to Professor Horace Rahskopf, First Vice-President and Program Chairman of SAA, and to Professor Charles Hunter, Chairman of the Committee on Local Arrangements for the convention. The indispensable assistance of Dr. Jean Utley in expediting the purposes and objectives of Professor Hunter's committee, are to be particularly acknowledged.

Resolved: That the American Speech and Hearing Association express its most sincere appreciation of the grand hospitality extended to it by the Stevens Hotel, Chicago, Illinois.

Read by West for the Committee:

Resolved: That the ASHA communicate to Mr. Lawrence J. Linck, Executive Director of the National Society for Crippled Children and Adults, our great appreciation of our splendid cooperative relationship with his organization and of the National Society's many constructive activities nationally in the interests of speech correction. We commend our liaison officers, Herbert Koepp Baker and Margaret Hall, for their very effective efforts in facilitating these activities of the National Society for Crippled Children and Adults.

Resolved: That the ASHA welcomes once again the opportunity which, through the long years, it has so often enjoyed, of acknowledging with gratitude and admiration, the gracious exertions of Professor Herbert Koepp Baker, the occasion at this time being his retirement from a period of constructive service as a member of the Association's Executive Council.

Moved by Raymond Carhart and seconded by Charles Pedry that the Resolutions be adopted. Passed.

Johnson presented the statement he had been asked to prepare concerning the Council's recommendations on interpretation and definition of terms and requirements for membership.

Moved by Johnson and seconded by Kantner that the portions of the By-Laws (Sec. 8, II, B and Sec. 8, III, C) providing for examination of applicants for membership be deleted. Lost.

Moved by Jesse Villarreal and seconded by Pedry that an alternative method providing for an oral examination and/or written examination at the discretion of the examining committee be adopted. Lost.

Moved by Spencer F. Brown and seconded by Carhart that the written examination be continued by the Committee on Credentials for this year. Passed.

Morris read the report of the Nominating Committee as approved and recommended by the Council.

President: Wendell Johnson
President-Elect: M. D. Steer
Executive Vice-President: Ernest Henrikson (1951-195_)
Vice-President: Henry Moser
Vice-President-Elect: Harlan Bloomer
Secretary-Treasurer: George A. Kopp
Councilors: Ollie Backus, Gordon Peterson.

Moved by Kantner and seconded by Zimmerman that the nominations be closed and that a unanimous vote be given to nominees. Passed.

The chair was yielded by Morris to the new president, Johnson, who immediately declared the meeting adjourned.

Elections to Membership and Promotions

Acting on the recommendation of the Committee on Credentials, the following were approved by the Council for the various levels of membership as indicated.

The following were elected to the status of Fellow:

McDonald, Eugene T.
Wepman, Joseph M.

The following were elected to the status of Professional Member:

Beasley, Jane E.
Bergman, Moe
Brackett, Isaac
Brigham, Fleda M.
Burtnett, Alice M.
Costello, Mary Rose
Curry, E. Thayer
Davison, Louise D.
Duffy, John K.
Fossum, Ernest C.
Gholson, Sibyl G.
Hayworth, Roma L.
Herbert, Esther L.
Horowitz, Esther
Keys, John W.
Kulewatz, Wilhelmine

LaFollette, A. C.
Lewis, Florence Stiles
Mawhinney, Clara Krefting
Miller, William Eugene
Miner, Adah
Newby, Hayes A.
Perry, Catherine C.
Platt, James H.
Sorrenson, Fred S.
Tolhurst, Gilbert C.
Unger, Dorothea S.
Wischner, George J.

The following were elected to the status of Clinical Member:

Abbott, Lee
Abbott, Thomas B.
Adams, Harlan Herbert
Amster, Walter William
Arnold, Ruth E. Garwood
Bargmeyer, Kurt B.
Baronofsky, Dorothy Lorio
Bebout, Betty
Becker, Myra Marks
Bednorz, Gertrude Ann
Bennett, Glendon L.
Berlin, Asa J.
Bernbaum, Madeline C.
Bixenstine, Anita
Black, Martha
Blattspieler, Ellen B.
Blomquist, Betty L.
Bowers, Madeline
Brooksbank, Ocea M.
Brown, Phyllis F.
Brubaker, Robert S.
Bruce, Helen B.
Bycraft, Helen B.
Calvert, James
Cartwright, Miriam B.
Cattle, Sara Fontaine
Cherhavy, Irene
Clark, Warren James
Clemons, Elaine S.
Cohen, Eva Schlossberg
Cothran, Lois
Cotten, Frances
Cottingham, Martha L.
Craig, Rebecca Sue
Cross, Gloria J.
Davis, Donald C.
Dawson, Myrtle H.
Donewald, Marian H.
Dotterer, Bertha Louise
Duffy, Ann Louise
Duffy, Virginia Harring
Fagen, Margaret H.
Fein, Bernice
Filben, Patricia Ann
Fisher, Jean E.
Flamenbaum, Mildred
Fogle, Catherine Lee
Foster, Geneva T.
Furey, Rosemary K.
Gaff, Jane
Ghertner, Roberta
Gifford, Mary Morris
Gilchrist, Florence S.
Giles, Gerald L.
Giltinon, Margaret B.
Glass, Ella M.
Graham, J. Keith
Granger, Wilma Ethel
Green, Janet Leslie
Greenleaf, Floyd
Greiner, Alice
Grove, Wilma M.
Hague, Mary Virginia
Hall, Dawn
Hallinan, Margaret C.
Haney, Mary Russell
Hanley, Clair N.
Hanses, Sister Mary Carmelia
Hanson, Dorothy C.
Harris, Norma
Hedges, Thayne A.
Hennessy, Mary Barrett
High, Jane C.
Horowitz, Leola Schaper
House, Arthur S.
Howard, Helen Wise
Hudson, Atwood
Hudson, Jo Anna
Humbert, LaVerne H.
Irwin, Charles Gordon
Ivey, Sara Mack
Jacobson, Joan
Jenkins, Russell L.
Johnston, Alice
Kaplan, Claire
Kastein, Shulamith
Kelly, Mary Patricia
Kennedy, Grace M.
Knauf, Vincent H.
Koach, Joseph L.
Kosh, Zelda Horner
Kratovil, Irma F.
Kriegman, Lois S.
Krueger, Marian L.
Krughoff, Mildred A.
Laguaite, Jeannette K.
Law, Mary Louise
Lencione, Ruth M.
Leutenegger, Ralph R.
Lillywhite, Herold
Lundeen, Dale J.
McCann, Margaret L.
McCausland, Margaret

McConnell, Freeman F.
McQueen, Mary P. L.
Meagher, Alice A.
Mearns, Theona S.
Meenen, Grace L.
Miller, John R.
Monson, Thomas A.
Moore, Lucelia M.
Morgan, Dorothy Lee
Morris, Phyllis Mae
Mulder, Robert L.
Mumford, Gladys M.
Nickell, Richard V.
Nienhaus, Barbara B.
Normoyle, M. Dorothy
Novack, Harry S.
Oberman, C. Esco
Olsen, Marguerite M.
Olson, Romaine P.
O'Neil, John J.
Ostrov, Daniel
O'Sullivan, Margaret T.
Oyer, Herbert Joseph
Parker, Bertha J.
Paul, John Eugene
Petersen, Anna E.
Petersen, Emely Marie
Phifer, Gregg
Porter, Wyne Wright
Poulos, Thomas H.
Powell, Renee
Proctor, Doris Ione
Ramedia, Mary A.
Rhodes, Mary Lou Silver
Richter, Frances C.
Roland, Doris Sarver
Rosenfeld, Laura S.
Ross, Alice T.
Rosser, Paul F.
Sarnoff, Jane B.
Sayler, Helen K.
Schauble, Joan Adelle
Schlanger, Bernard
Schlanger, Phoebe Honig
Schmelter, Marguerite M.
Scott, Duncan R. C.
Senft, Lois Burrack
Sherman, Thelma R.
Shutts, Ross Edwin
Sidley, Millicent
Simpson, Gladys E.
Smith, Linore Madeline
Smith, Margie Tom
Snyder, Jane Lois
Sorensen, Mary B.
Specks, Marcia Greenburg
Spokely, Marjorie Urquhart
Steele, Edith L.
Steffgen, Vivian
Still, Nannie Sue
Stipley, Ella B.
Strait, Rose
Strazzulla, Millicent
Sugden, Frances B.
Taussig, Eleanor
Tew, Roy Edwards
Varner, Kathleen
Waddle, Elsie L.
Walcher, Norma Alma
Washa, Laura K.
Wasson, Waldo
Way, Lloyd C.
Wedberg, Conrad F.
West, Ruby H.
White, Anna Marie
Williams, David
Williams, Dean E.
Williams, Dorothy J.
Williams, Mary E.
Wilson, Betty Ann
Wilson, Beverley L.
Wilson, Donald M.
Wood, Margaret Louise
Wood, Nancy E.
Woods, Roland E.
Wright, Gretchen
Wyatt, Gertrud Lasch
Wyche, Virginia Lee
Young, Ruth Ann
Zedler, Empress Young
Zmolek, Donna Mae Conard

Committee Appointments

Standing Committees

Academic and Professional Preparation

1. John W. Black (1949-1953)
2. Raymond Carhart (1949-1953)
3. Letitia Elwood Raubicheck (1949-1951)
4. Virginia S. Sanderson (1949-1951)
5. Martin F. Palmer, Chairman (1949-1951)

Credentials

1. Harlan Bloomer (1949-1951)
2. Leo G. Doerfler (1949-1953)
3. Claude E. Kantner (1949-1951)
4. Gordon Peterson (1949-1953)
5. Margaret E. Hall, Chairman (1949-1950)

Ethical Practice

1. James F. Curtis (1949-1951)
2. William G. Hardy (1949-1951)
3. Alonzo Morley (1949-1953)
4. Kenneth S. Wood (1949-1953)
5. Harold Westlake, Chairman (1949-1952)

Liaison
1. *Martin F. Palmer* (1949-1951)
2. *Margaret E. Hall* (1949-1950)
3. *Harold Westlake* (1949-1952)
4. *Henry Moser* (1950)
5. *Grant Fairbanks* (1949-1950)
6. *George A. Kopp* (1949-1950)
7. *Wendell Johnson*, Chairman (1950)

Program for the Twenty-sixth Annual Convention:
1. *Harlan Bloomer*
2. John Gaeth
3. Elise Hahn
4. Wilbert Pronovost
5. Carl Ritzman
6. Katherine Thorn
7. Joseph Wepman
8. Robert West
9. *Henry Moser*, Chairman

Terminology
1. Grant Fairbanks (1950-1953)
2. William Peacher (1950-1952)
3. William Temple (1949-1950)
4. Harry Wise (1950-1951)
5. Samuel Robbins, Chairman (1950-1954)

COMMITTEES

Association Honors
1. Frank Bakes
2. T. Earle Johnson
3. Jesse James Villarreal
4. *Wendell Johnson*, Chairman

Budget
1. *Grant Fairbanks*
2. *Wendell Johnson*
3. *George Kopp*, Chairman

Constitutional Revision
1. Ernest H. Henrikson
2. Oliver Bloodstein
3. Mary Wehe Huber, Chairman

Exchange of Materials
1. D. C. Spriestersbach
2. John N. Clancy
3. Louis N. DiCarlo, Chairman

Nominations (Five most recent past presidents)
1. Martin F. Palmer
2. Herbert Koepp Baker
3. Clarence T. Simon
4. Harry Heltman
5. D. W. Morris, Chairman

Speech Correction Fund
1. Spencer Brown
2. Herbert Koepp Baker
3. Lou Kennedy
4. *George Kopp*
5. *Wendell Johnson*, Chairman

Advisory Committees to Committee on Academic and Professional Preparation:
Advisory on Speech Disorders
1. Jon Eisenson
2. E. Robert Harrington
3. Ruth Beckey Irwin
4. Jack Matthews
5. Robert Milisen
6. Charlotte G. Wells
7. Letitia Raubicheck, Chairman

Advisory on Hearing Disorders
1. Merle Ansberry
2. Norton Canfield
3. William G. Hardy
4. Harriet Green Kopp
5. S. Richard Silverman
6. Raymond Carhart, Chairman

Advisory on Research
1. Grant Fairbanks
2. Paul Moore
3. Wilbert Pronovost
4. C. Horton Talley
5. Lee Edward Travis
6. Joseph M. Wepman
7. John W. Black, Chairman

Midcentury White House Conference
1. Virgil A. Anderson
2. Hildred Schuell
3. Darrel Mase
4. William G. Wolfe
5. Jayne Shover
6. *Wendell Johnson*, Chairman

Special Reorganization Committee
1. Raymond Carhart
2. *Grant Fairbanks*
3. Margaret Hall
4. *George Kopp*
5. S. Richard Silverman
6. Robert West
7. *Wendell Johnson*, Chairman

Advisory to Special Reorganization Committee
1. Mildred F. Berry
2. Myfanwy Chapman
3. Alan B. Clemons
4. George A. Kelly
5. Leon Lassers
6. Conrad Wedberg, Chairman

Extract From The Report Of The Treasurer

Balance Sheet

June 30, 1949

Assets

Cash		$ 66.50
Cash in National Bank of Detroit		7,101.26
Accounts Receivable		242.60
Petty Cash Funds		
Speech Correction Foundation	$ 150.00	
Credentials Committee	25.00	
Editor's Office	69.61	
Wayne University	25.00	169.62
Equipment	$ 414.43	
Less: Reserve for Depreciation	41.44	372.99
Deferred Expense (1949 Convention)		19.74
Total Assets		$8,072.70

Liabilities

Accounts Payable		
Interstate Printers & Publishers, Inc.	$1,184.79	
Wayne University	6.62	$1,191.41
Advances		
From Members	34.55	
From Subscribers	133.30	167.85
Total Liabilities		$1,359.26

Net Worth

Journal of Speech and Hearing Disorders Fund	$3,048.30	
Publications Fund	2,373.64	
General Fund	2,671.56	8.093.50
American Speech Correction Foundation Fund*		(1,380.06)
Total Net Worth		$6,713.44
Total Liabilities and Net Worth		$8,072.70

* (Deficit)

Balance Sheet

November 30, 1949

Assets

Cash		$ 286.55
Cash in National Bank of Detroit		5,537.27
Accounts Receivable		365.52
Petty Cash Funds		
Speech Correction Foundation	$ 150.00	
Credentials Committee	150.00	
Editor's Office	25.00	
Wayne University	25.00	350.00

Equipment	$ 414.43	
Less: Reserve for Depreciation	58.69	355.74
Total Assets		$6,895.08
Liabilities		
Advances		
From Members	37.55	
From Subscribers	154.30	$ 191.85
Total Liabilities		$ 191.85
Net Worth		
Journal of Speech and Hearing Disorders Fund	$2,666.06	
Publications Fund	3,170.67	
General Fund	2,216.56	8,053.29
American Speech Correction Foundation Fund*		(1,350.06)
Total Net Worth		$6,703.23
Total Liabilities and Net Worth		$6,895.08

* (Deficit)

George A. Kopp, *Secretary*